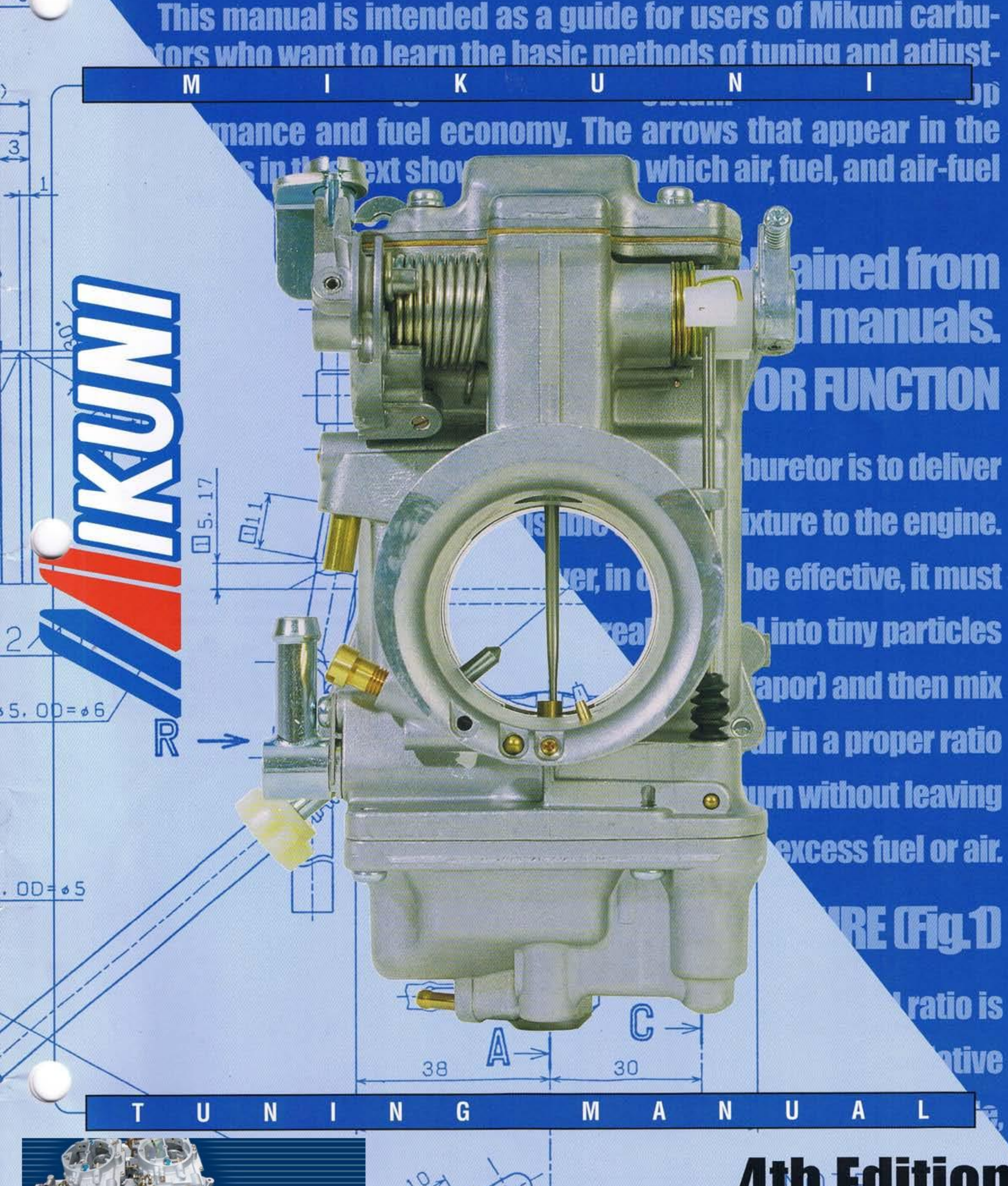
SUDCO

MIKUNI


This manual is intended as a guide for users of Mikuni carbu-
tors who want to learn the basic methods of tuning and adjust-
mance and fuel economy. The arrows that appear in the
s in the text show which air, fuel, and air-fuel
ained from
d manuals.
OR FUNCTION
rburetor is to deliver
xture to the engine.
er, in o be effective, it must
into tiny particles
apor) and then mix
ir in a proper ratio
urn without leaving
excess fuel or air.
RE (Fig.1)
ratio is
tive
MIKUNI
3
1
30°
□5. 17
□11
2
5. OD=ø6
R
. OD=ø5
A
C
38
30
10
1. THE THROTTLE VAL

TUNING MANUAL

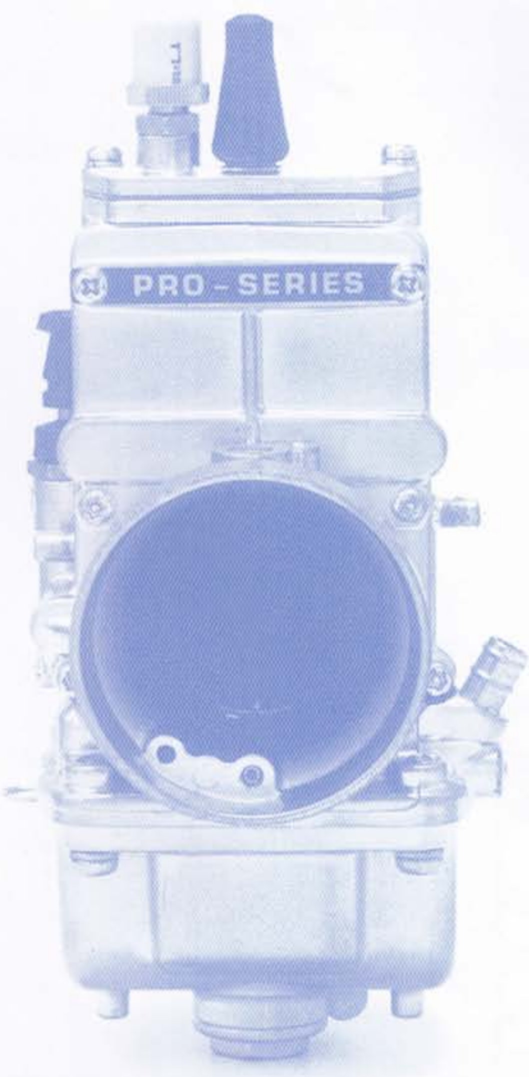
4th Edition

CARBURETOR-MANUAL.COM

Introduction

Sudco International is America's leading source for Mikuni aftermarket carburetors, parts, accessories, and information. Sudco has been selling Mikuni products to the powersports industry for over twenty five years and continues to provide the most comprehensive service available for Mikuni aftermarket products.

The Sudco / Mikuni tuning manual is a compilation of official Mikuni technical manuals combined with years of hands on experience setting up, tuning, and troubleshooting Mikuni products. All information contained within this manual is specific to Mikuni aftermarket carburetor designs only. The Mikuni aftermarket division does not represent the exact Mikuni products which may have been supplied by the Original Equipment Manufacturer. In most cases, the parts from aftermarket carb designs are not interchangeable with OEM carburetors.



SUDCO

MIKUNI
RACING CARBURETORS

Please take the time to read the chapter on general carburetor theory and operation. Sudco has often been called upon to troubleshoot carburetor problems. Many types of problems can be identified and solved with an understanding of carburetor fundamentals. Motorcycle performance does not have to be complicated if you have the basic knowledge.

It is our hope that you will use this manual as a guide and reference tool as do many schools and race mechanics.

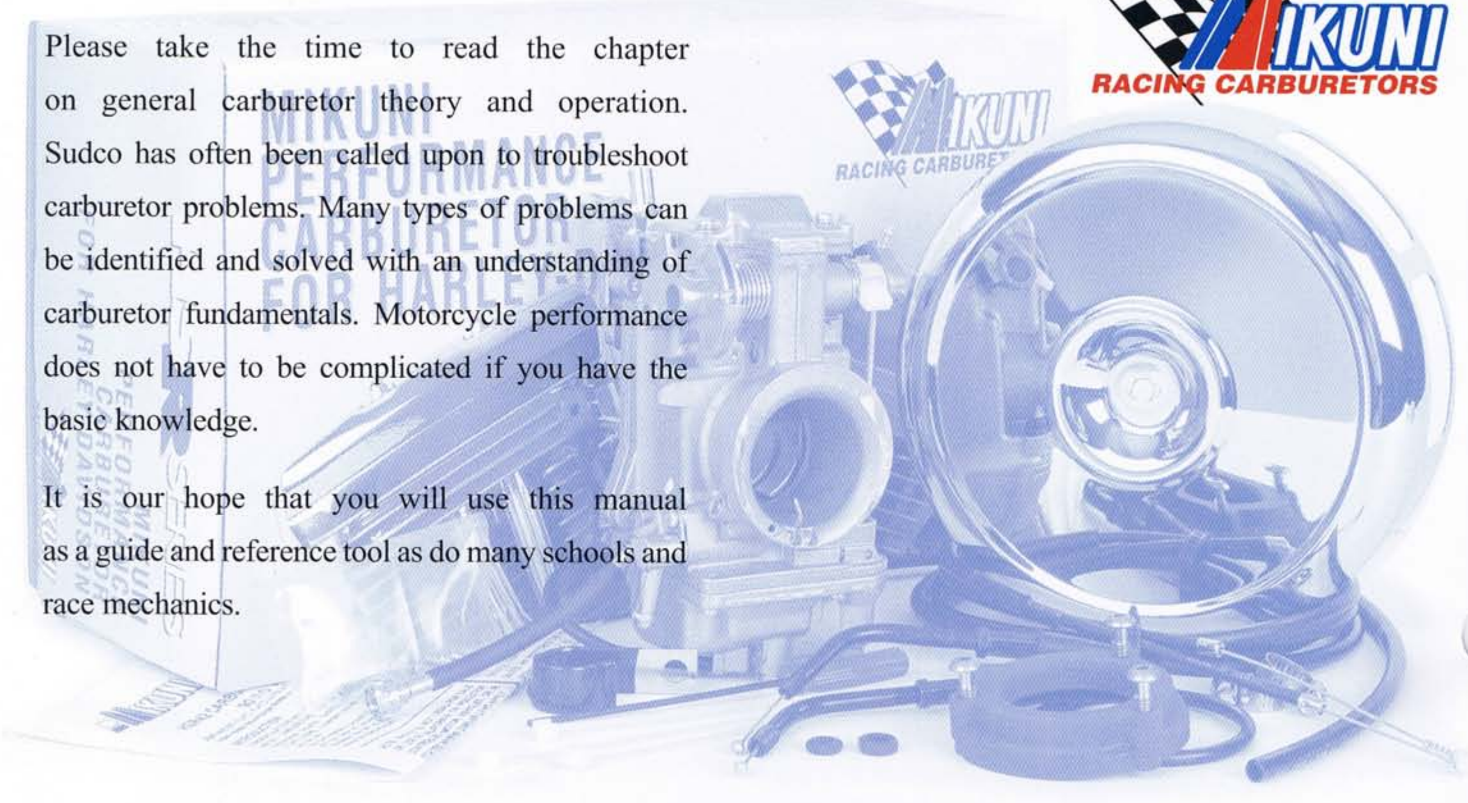
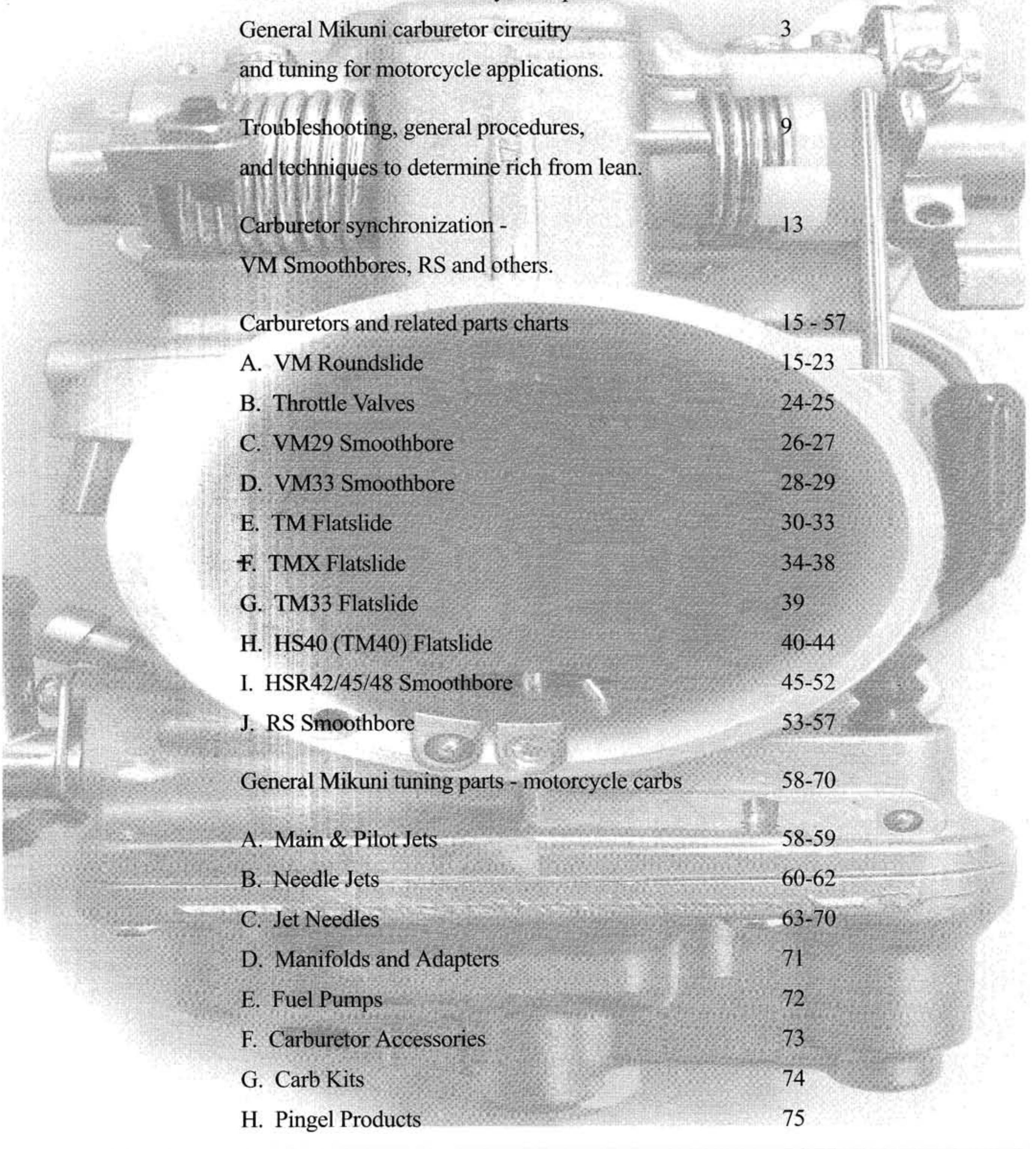


TABLE of CONTENTS



Basic slide carburetor theory and operation. 2

General Mikuni carburetor circuitry and tuning for motorcycle applications. 3

Troubleshooting, general procedures, and techniques to determine rich from lean. 9

Carburetor synchronization - VM Smoothbores, RS and others. 13

Carburetors and related parts charts 15 - 57
A. VM Roundslide 15-23
B. Throttle Valves 24-25
C. VM29 Smoothbore 26-27
D. VM33 Smoothbore 28-29
E. TM Flatslide 30-33
F. TMX Flatslide 34-38
G. TM33 Flatslide 39
H. HS40 (TM40) Flatslide 40-44
I. HSR42/45/48 Smoothbore 45-52
J. RS Smoothbore 53-57

General Mikuni tuning parts - motorcycle carbs 58-70

A. Main & Pilot Jets 58-59
B. Needle Jets 60-62
C. Jet Needles 63-70
D. Manifolds and Adapters 71
E. Fuel Pumps 72
F. Carburetor Accessories 73
G. Carb Kits 74
H. Pingel Products 75
I. K&N Filters & Flame Arresters 76-77

Watercraft Carburetors 78-90
Tools 91

Reading Spark Plugs 92

VENTURI OPERATION

Operation of a Simple Venturi

The Mikuni slide type carburetors described in this manual are also known as “variable venturi” type carburetors. A venturi is a restriction within the carburetor designed to speed up the air flowing through the carb. It is at the point of the smallest cross section that the incoming air flow will have the greatest velocity. As air flow speeds up to pass through the venturi, it loses pressure. It is at this point that the pressure within the carb throat will be at its lowest; this is called “depression”.

At this point of maximum depression, the fuel will be introduced to the air stream. In order to transfer fuel from the fuel chamber into the carburetor venturi, a small tube is placed into the venturi which connects the fuel load in the chamber to the venturi. The fuel chamber is open to atmospheric pressure (15 psi approx.) and the pick up tube is exposed to the depression within the venturi. The difference in pressure will attempt to equalize through the pick up tube, pushing fuel from the fuel chamber into the venturi. The fuel is mixed with the incoming air and delivered to the engine down stream. This is the basic principle by which all carburetors operate.

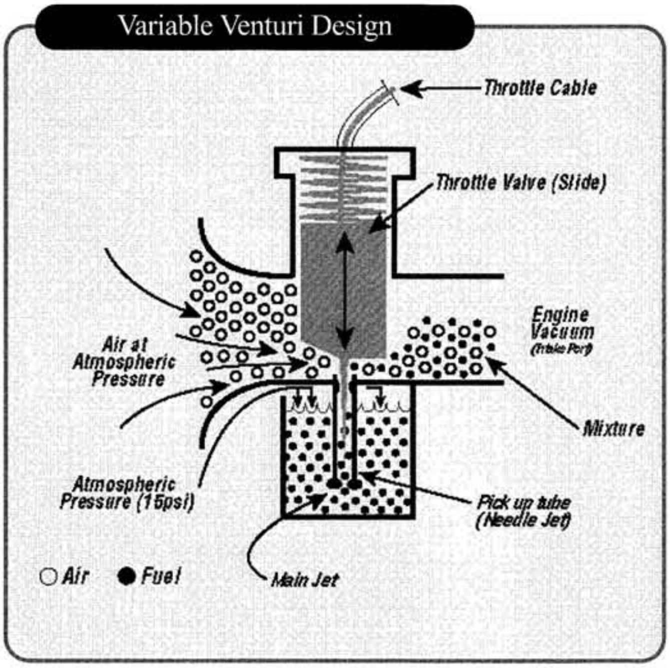
It is important to remember that it is the pressure difference between the fuel chamber and the venturi which pushes the fuel into the intake air stream. The presence of engine vacuum alone is not enough to draw fuel into the intake port. Without the atmospheric pressure in the fuel chamber, the fuel could not be delivered into the intake port.

The above model will serve a single speed engine very well with the venturi becoming the throttle. The engine will run at one speed only, depending upon the size of the venturi. Because motorcycles are operated at various engine speeds, there needs to be a way to control the speed of the engine.

In order to throttle down this wide open carburetor design, Mikuni has inserted a slide which crosses the carburetor throat to control air flow to the engine, limiting engine speed according to slide lift. This slide lift varies the cross section of the carburetor bore at the venturi point. This is how slide carburetors become known as “variable venturi”.
These variable venturi type carburetors are very good at maintaining high air speeds within the carburetor throat and generally offer better overall performance than most other carburetor designs.

From this simple fuel delivery circuit, carburetor designers will add and divide this circuitry in order to tailor the mixture available to the engine, enabling it to run accurately at a wide variety of speeds and loads.

Variable Venturi Design

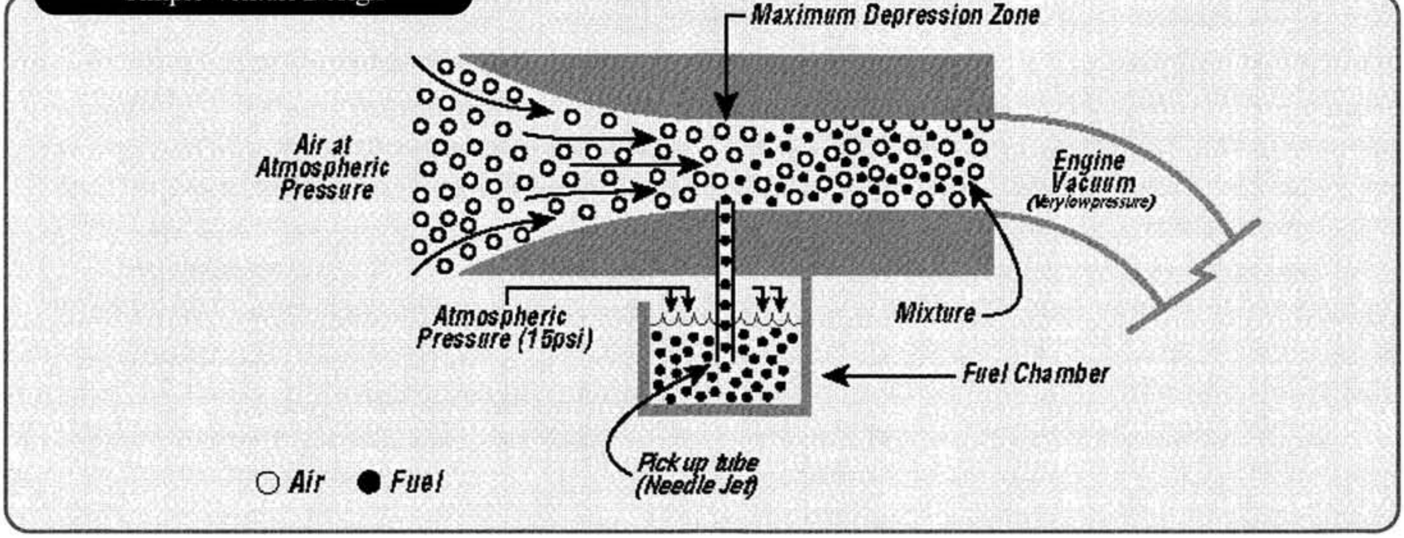

Throttle Cable
Throttle Valve (Slide)
Engine Vacuum (Intake Port)
Air at Atmospheric Pressure
Mixture
Atmospheric Pressure (15psi)
Pick up tube (Needle Jet)
○ Air ● Fuel
Main Jet

Operation of a Variable Venturi

All Mikuni motorcycle carburetors described in this manual are of the variable venturi type. With this type of carburetor, the maximum depression zone is beneath the throttle valve (slide) which is raised and lowered by the throttle cable, controlling the speed of the engine. As shown in the drawing, the bottom of the slide features a tapered needle which fits into the fuel pick up tube (needle jet) to meter the fuel delivery of the tube from about a 1/4 throttle to 3/4 throttle. From 3/4 to full throttle, the needle will be too narrow to affect the fuel flow of the tube. From this point on, the fuel flow of the tube is metered by the main jet which is positioned at the bottom of the tube.

The above description is a simple model of the main circuit common to most Mikuni slide type carburetors. The following chapter contains a more complete description of Mikuni motorcycle carburetor design and fuel delivery circuits.

Simple Venturi Design


Maximum Depression Zone
Air at Atmospheric Pressure
Engine Vacuum (Very low pressure)
Atmospheric Pressure (15psi)
Mixture
Fuel Chamber
Pick up tube (Needle Jet)
○ Air ● Fuel

GENERAL MIKUNI SLIDE CARB CIRCUITRY

This manual is intended as a guide for users of Mikuni carburetors who want to learn the basic methods of tuning and adjusting to obtain top performance and fuel economy. The arrows that appear in the drawings in this text show direction in which air, fuel, and air-fuel mixture flows.

Information herewith obtained from Mikuni engineering data and manuals.

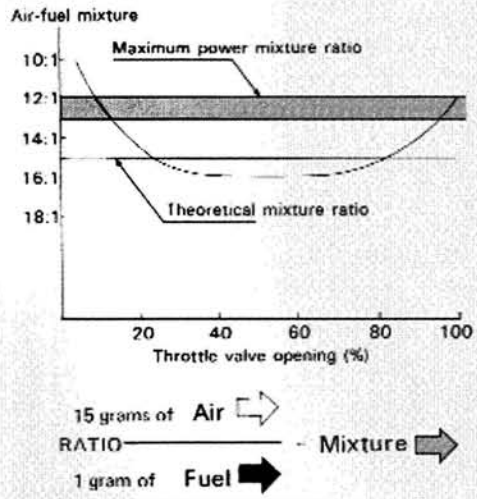
1. CARBURETOR FUNCTION

The function of a carburetor is to deliver a combustible air-fuel mixture to the engine. However, in order to be effective, it must first break the fuel into tiny particles (in the form of vapor) and then mix the fuel with air in a proper ratio so it can burn without leaving excess fuel or air.

2. AIR-FUEL MIXTURE (Fig.1)

The mixture of the air-fuel ratio is generally expressed by its relative weight proportion. For example, the amount of air required for complete combustion of 1 gram of fuel under normal conditions is:

Figure 1



Varying mixture ratios are required for the engine depending on operating conditions. Although the required mixture ratio varies more or less with the type of engine, its cooling efficiency, etc., the mixture ratio shown in fig. 1 is required for ordinary engines. In the high speed range the ratio of about 12 to 13 grams of air for 1 gram of fuel produces the maximum output. However, in the case of an engine with low cooling efficiency, a somewhat richer mixture (10 to 12 grams of air against 1 gram of fuel) may be required to prevent seizure of the engine.

3. FUNCTIONS AND CONSTRUCTION MIKUNI SLIDE TYPE CARBURETORS

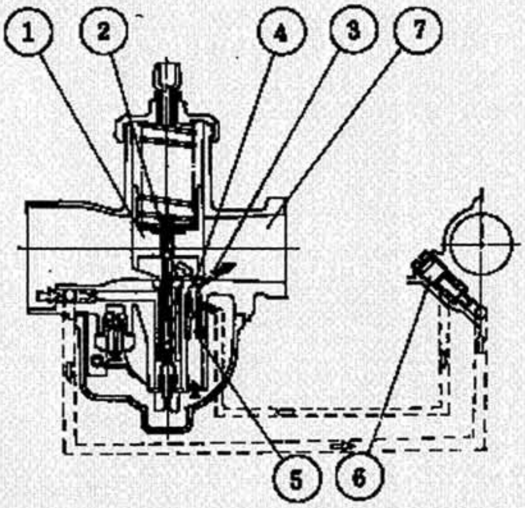
Motorcycle engines are operated under a wide range of conditions, from idling with the throttle valve (Fig.2(1)) remaining almost closed, to the full load (the maximum output) with the throttle valve fully opened. In order to meet the requirements for the proper mixture ratio under these varying conditions, a low-speed fuel system (the pilot system) and a main fuel system (the main system) are provided in Mikuni Slide-type carburetors, except Mikuni TMS.

A. - The Pilot System

Low-speed fuel system (Fig.2 and Fig.3)

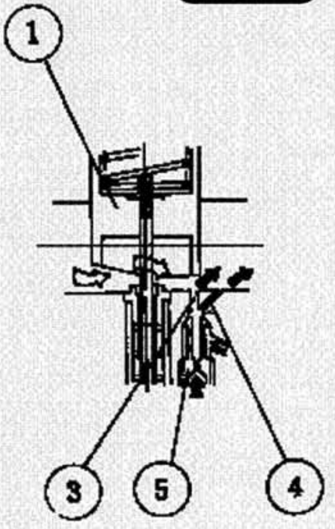
Since the engine is operated with the throttle valve almost closed at idling or in the low speed range, the velocity of air flowing through the needle jet (2) is slow. Consequently, a vacuum strong enough to draw fuel from the needle jet in main fuel system is not created. The fuel supply during this low speed operation is controlled by means of the pilot outlet (3) and the bypass (4) that are situated nearest to the engine. At idle, when the throttle valve is slightly opened, fuel metered by the pilot jet (5) is mixed with air adjusted in a proper amount by the air screw (6) and is broken into fine vapor particles.

Figure 2



The mixture is again mixed with air coming from the bypass and is drawn into the pilot outlet to mix with air flowing through the main bore (7). The fuel mixed with air at this stage then goes to into the engine. When the throttle valve is opened slightly during low speed operation, the pilot outlet alone cannot supply the required fuel and the shortage has to be made up with fuel injected from the from the bypass. The adjustment of the mixture ratio during this stage is made by the pilot jet and the air screw, as in the case of a two-hole type fuel system (Fig.3). While at low speed operation, if full throttle is initiated a similar shortage of fuel again has to be injected from the bypass until enough (vacuum) can be created to draw fuel from the main fuel system. There is also a one-hole type low speed fuel system mainly used for carburetors having a small main bore. The process of producing the air fuel mixture and of adjusting the mixture ratio are the same as in a two-hole type low speed system.

Figure 3



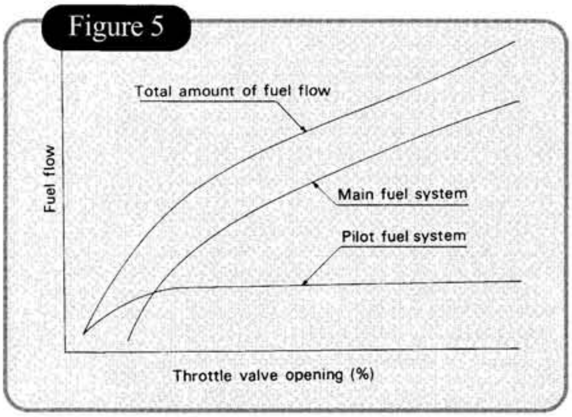
GENERAL MIKUNI SLIDE CARB CIRCUITRY

B. - Main Fuel System

On Mikuni VM-type carburetors, the pilot system and the main system are of independent construction. The fuel flow in these two systems is shown in Fig.5. There are two types of main fuel system; one is a primary type used widely for 2-cycle engines and the other is a bleed type which is normally used for 4-cycle engines as well as for rotary valve 2-cycle engines.

Sudco uses primary type needle jets in most 4-cycle VM applications. It is important to note (Fig.5) that the main system mixture delivery is in addition to the mixture delivered by the pilot system. Therefore, adjustments to the pilot system should be made first, as they will affect the adjustment of the main system to a diminishing extent as the throttle is opened from 1/4 to full throttle.

Figure 5

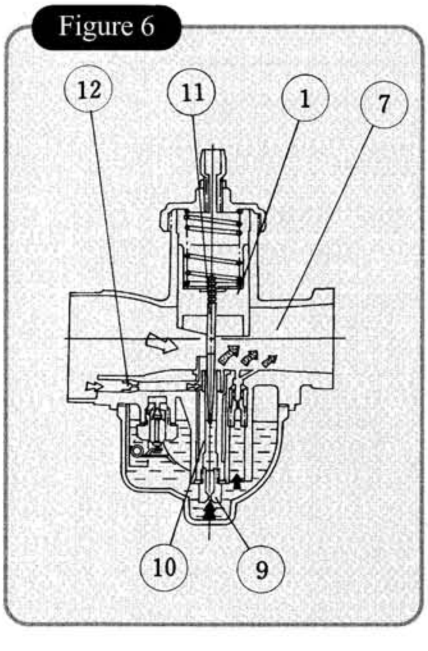


Primary Type (Fig.6)

When the throttle valve is opened about 1/4 or more, the velocity of air flowing through the needle jet (10) increases and also the vacuum increases to the point where fuel can be sucked in. When the opening of throttle valve (1) is between a quarter and three quarters, fuel passes through the main jet (9) and, after being metered in the clearance between the needle jet (10) and the needle (11), it is mixed with air that is metered by the air jet (12) and atomization of the fuel is accelerated.

The mixture is then injected, after mixing with air flowing through the main bore (7), to the engine in the optimum air-fuel ratio. During this process of operation, the cutaway of the throttle valve serves to control the vacuum on the needle jet, thereby regulating the amount of fuel that is injected to the engine. When the throttle valve is opened more than three quarters high speed operation, fuel is metered chiefly by the main jet (9).

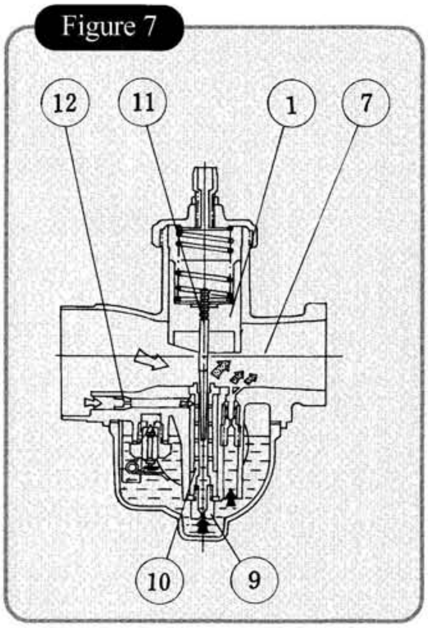
Figure 6



Bleed Type (Fig.7) The construction of the bleed-type (10) main fuel system is the same as that of the primary type, except for the bleed holes that are provided in the needle jets.

In the case of the primary type, air which comes from the main air jet is mixed with the raw fuel after it has been metered by needle jet and needle. This atomization takes place behind the nozzle screen or shroud above the needle jet outlet. The bleed type on the other hand is designed to bleed the air coming from the main air jet into the body section of the needle jet where it is emulsified with the fuel coming up from the bottom. The needle jet and needle then meter a blend of air/fuel, resulting in a finer atomization and generally leaner mixture than the same size primary type needle jet.

Figure 7

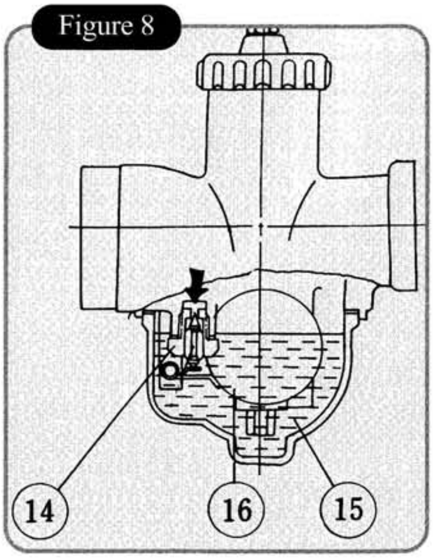


C. - Float System (Fig.8)

The float system serves to maintain a constant level of fuel in the bowl. Fuel flows through the needle valve (14) and enters the float chamber (15). As the fuel enters the float chamber, the float (16) moves upward to its pre-determined level because of buoyancy. When the fuel reaches the pre-determined level, the needle valve begins to close due to the lever action of the float arm rising as the float attains buoyancy, thus shutting off the supply of fuel.

The fuel level in the bowl controls the amount of fuel which is metered to make the optimum fuel mixture. For example, too high a level allows more fuel than necessary to leave the needle jet, enriching the mixture. Too low a level results in a leaner mixture, as not enough fuel leaves the needle jet. Therefore, the pre-determined fuel level should not be changed arbitrarily.

Figure 8



D. - Starter System (Fig.9)

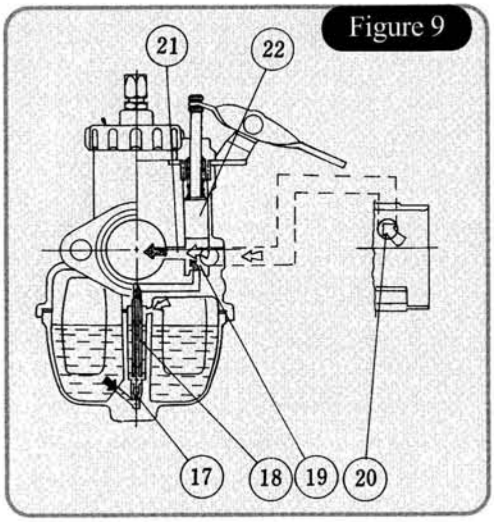


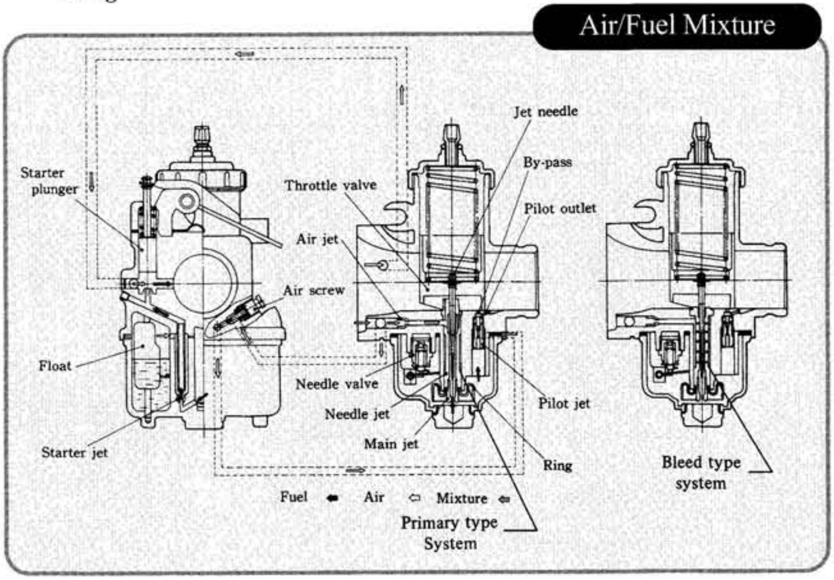
Figure 9

Rather than a choke, the enrichener type starter system is employed for Mikuni carburetors. The enrichener starter type, fuel and air, for starting the engine are metered by entirely independent jets. The fuel metered by the starter jet (17) is mixed with air and is broken into tiny particles in the emulsion tube (18). The mixture then flows into the plunger area (19), mixes again with air coming from the the air intake port for starting and is delivered to the engine in the optimum air-fuel ratio through the fuel discharge passage (21). The enrichener is opened and closed by means of the starter plunger (22). Since the enrichener is constructed so as to utilize the vacuum of the inlet passage (20), it is important that the throttle valve is closed when starting the engine.

4. TUNE UP & CARBURETOR SELECTION

Tuning up normally means a process of accurate and careful adjustment to obtain maximum engine performance. Although, it means in a broad sense, an economical improvement in fuel consumption. Improvement of power output of the engine depends on the amount of air drawn into the cylinder per unit time. A practice generally followed for engine tune-up includes:

1) **To improve suction efficiency and exhaust efficiency by remodeling the intake and exhaust system**
2) **To improve combustion efficiency by raising the compression ratio**
3) **To increase the number of revolutions by adjusting the ignition timing**


Air/Fuel Mixture

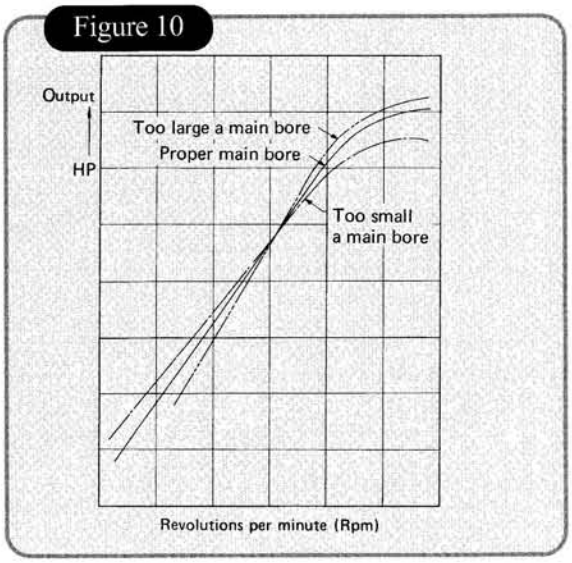


Figure 10

A.-Carburetor Main Bore Size Selection

One of the prerequisites for improving the output is to use a carburetor with as large a main bore as possible. However, a large main bore alone does not necessarily improve the output. As shown in Fig.10, it is true that a large main bore improves the power output in the high speed range. However, in the slow speed range, the output may drop. The main bore size selection should be determined by various factors such as: (1) whether the vehicle is intended for racing, (2) the design of the engine, (3) riding technique of the rider, (4) the rider's preference, etc. In addition, the maximum output, the maximum torque, and the minimum number of revolutions for stable engine operation must also be taken into account. Fig.10 shows the values which we have obtained throughout experience over the years.

Since the engine comes in a wide variety of types, the values given in Fig.10 should be taken only as reference values.

5. CARBURETOR SETTING

Once the main bore size of the carburetor is determined, a test (normally referred to as setting or matching) to select the proper jet or setting part should be made. The size of the jet is determined by measuring the output in a bench or in a chassis dyno test. For racing, it is best to determine the proper size of the jet on the racing course.

The following points must be taken into account:

1) The altitude (atmospheric pressure), temperature and humidity of the racing course.
2) The operation of the engine based on the topography of the racing course.
3) Generally, carburetor tuning is done in four stages: idle, low speed, mid-range, and high speed in that order. With the Mikuni, each stage is controlled by a separate component simplifying the tuning process. The engine cylinders need to take sufficient air and fuel mixed in proper amounts. The function of a carburetor is to prepare and supply a mixture of fuel vapor and air to the engine cylinders in the proper ratio for efficient combustion.

GENERAL MIKUNI SLIDE CARB CIRCUITRY

A. - Pilot Jet and the Low Speed Fuel System (Fig.15 & 16) (Air Screw type carburetors only)

In the low speed fuel system of the carburetor, the pilot outlet and the bypass have holes whose size is in relation to the main bore of the carburetor. Hence, the adjustment and selection of the pilot jet and the air screw is important. Turn the throttle a little at no-load operation and see if the engine revolution increases smoothly. If the pilot jet is too small, increase in the engine speed will be slow and irregular. Too big a pilot jet, on the other hand, would give rise to heavy exhaust smoke as well as a dull exhaust noise. If you cannot maintain the speed in the range of 12-25 mph with the throttle held,the pilot is too small.

Selection and setting of the air screw should be made in the following manner. First, warm up the engine adequately and set the idle screw so that the engine revolution at idling will be about 10-20% higher than the number of revolutions you are aiming at. Then, turn the air screw left and right (between 1/4 and 1/2 turn) and select the position where the engine revolution reaches the maximum. Adjust the idle screw to bring down the engine revolution to your target speed for idling. After this adjustment of the idle screw is made, select once more the position where the engine revolution reaches the maximum, by turning the air screw left and right (between 1/4 and 1/2 alternately). At this point, attention should be paid to the following points.

1) If there is a certain range in the opening of the air screw where fast engine revolution can be obtained, (for instance, the number of revolutions does not change in the range of 1-1/2 to 2.0 turn), for better performance you should select approximately 1-1/2 turns.

2) To determine the "fully closed" position of the air screw, turn the air screw slightly. Excessive tightening of the air screw would damage the seat. The position where the air screw comes to a stop should be considered the "fully closed" position. The maximum number of turns in the opening of the air screw must be limited to 3.0. If the air screw is opened over 3.0 turns, the spring will not work and the air screw can come off during operation of the vehicle. Fig. 16 shows the fuel flow curve in relation to the opening of the air screw.

Figure 15

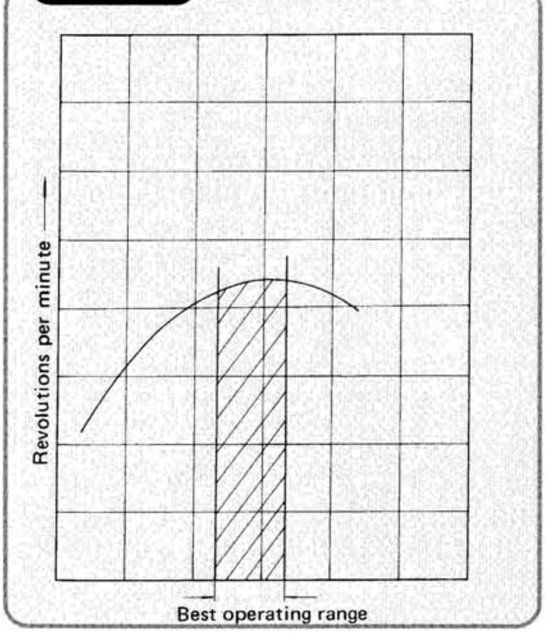
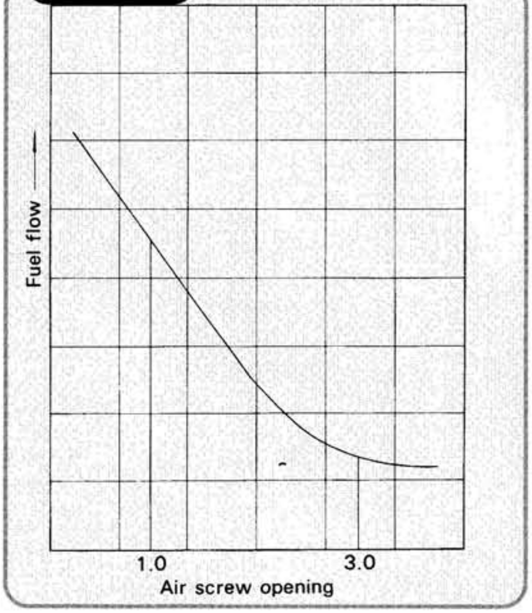


Figure 16



B. - The Cutaway Size of the Throttle Valve (Fig.17)

The size of the cutaway of the throttle valve affects the air-fuel mixture ratio when the degree of the throttle valve opening is between 1/8 and 1/2, especially in the range of 1/8 and 1/4 opening. As the cutaway gets larger in size, with the throttle valve opening kept unchanged, air inflow resistance is reduced and causes the amount of air intake to increase, resulting in a lean mixture. On the other hand, the smaller the size of the cutaway, the richer the air-fuel mixture will become. Interchange of the cutaway is made, when the low speed fuel system is out of balance with the main fuel system.

Figure 17

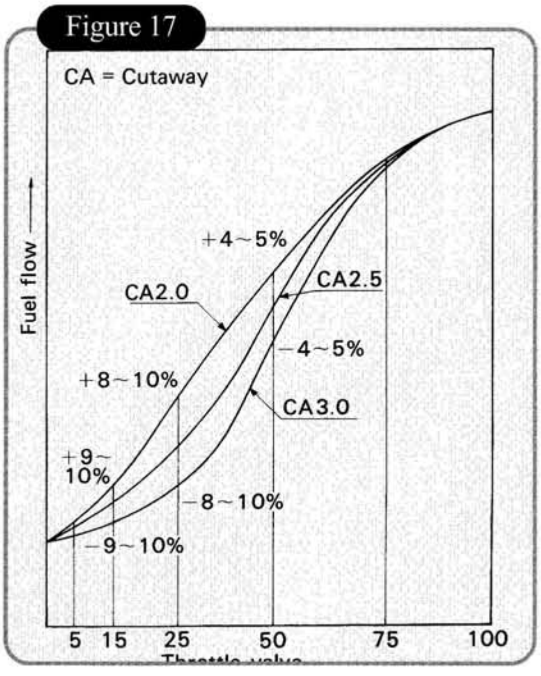
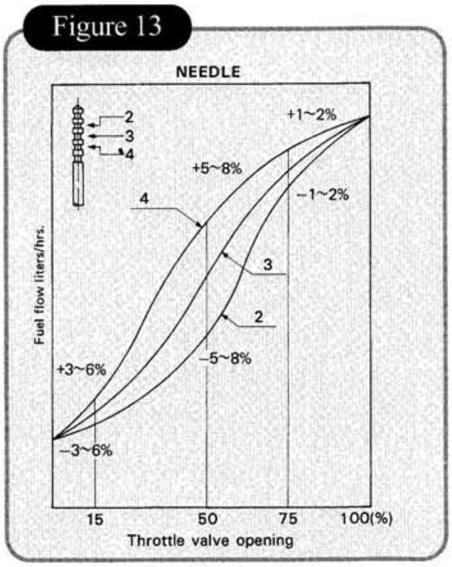


Fig.17 shows the fuel flow curve in relation to the size of the cutaway.

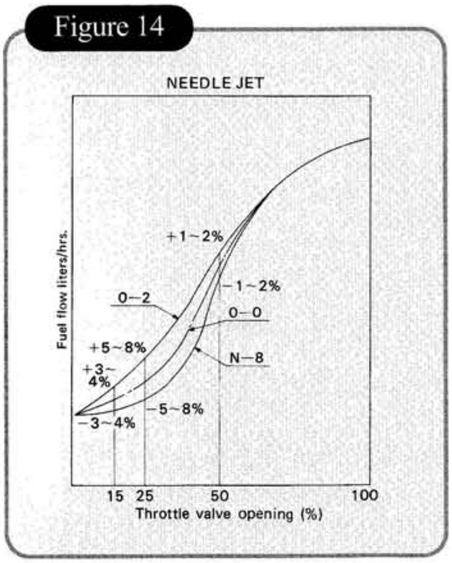
C. - Selection of NEEDLE JET and NEEDLE (Fig.13 & 14)

Figure 13



A carburetor with a piston-type throttle valve is also called a variable venturi-type carburetor. In this type of carburetor, the needle jet and the needle serve to control a proper air-fuel mixture ratio during the so-called medium throttle valve opening (between 1/4 and 3/4 opening). The right combination of needle jet and needle will have a major bearing on the engine performance at partial load. The jet needle tapers off at one end and the clearance between the needle and the needle jet increases as the throttle valve opening gets wider. The air-fuel mixture is controlled by the height of the needle positioning clip that is inserted into one of the five slots provided in the head of the needle. The variation of fuel flow based on the height of the clip is shown in Fig. 13.

Figure 14



Generally, it is easier to evaluate and select a needle jet than it is to select a jet needle. The reason is that the needle jet sizes are arranged on a linear scale, with each size increasing in increments. (For a thorough explanation of needle jet sizes please refer to Chapter 5.) Jet needles are not cataloged according to a linear size pattern or a rich to lean scale. The most effective way to determine the needle jet / jet needle relationship is to visualize the jet needle as a tool for setting the fuel delivery curve, or the shape of the fuel delivery according to throttle opening. The needle jet controls the fuel delivery rate, either increasing or decreasing the fuel delivery according to the profile of the needle being used. Sudco suggests that initially, experiments should be limited to changes in needle jet size. Once a satisfactory size has been identified, experiment with needle clip position to obtain the best driveability and roll-on performance. If one is working with an O.E.M. Mikuni carburetor, it is safe to assume that the manufacturer has already selected the proper needle or "fuel curve" for that motorcycle and changing the needle profile will complicate the tuning process. Once the correct needle jet size has been identified and it becomes apparent that a change in needle profile is necessary, then refer to the needle dimension charts in Chapter 5.

To evaluate the performance of the needle jet, run the motorcycle in third gear at 1/4 throttle, taking notes on how the engine accelerates from 1/4 to 1/2 throttle only. The engine should respond cleanly and crisply without sputtering or bogging. It may be useful to try experimenting with clip positions to decide if a problem is a rich or lean condition. If the engine response is better at a lean clip position, it may be necessary to change to a leaner needle jet. Sudco suggests that it is best to use as lean a needle jet as possible, as this component will have the greatest effect on fuel economy, emissions, and general driveability. If a leaner needle jet is installed and there is no negative impact on performance, and no positive effect, continue working in the direction of "lean" until there are negative results and go back up one size.

D. - Selection of the Main Jet

First, do the following on a flat road.

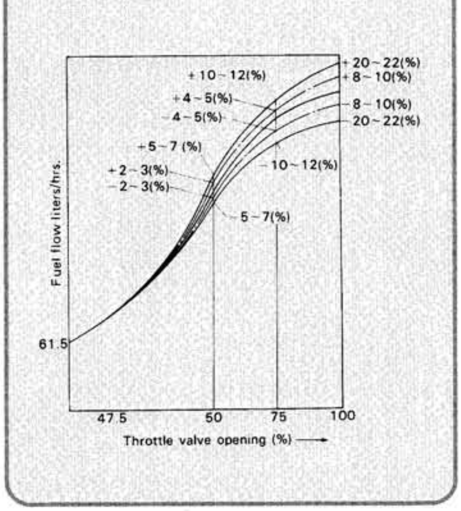
1) Select the largest main jet (the limit of a rich mixture) which can give you the maximum revolutions per minute (the maximum speed). In this case, select the engine speed according to the dimensions of the test course.
2) Compare the gain in speed that you can obtain by quick acceleration from a constant speed of 25-30 MPH to maximum desired speed, by using different sizes of main jets.
3) Check the exhaust fumes and read the spark plug (selection of the spark plug should be made based on the thermal value that would best suit power output of the engine).

Next, compare on the racing course, the test results you obtained from above. The points to be checked, among others, are:

1) Smooth and steady operation of the engine at as high a speed as possible under varying operating conditions such as shifting of the gears, changes in road conditions, ascending and descending slopes, etc.
2) Sustained operation at low speeds and at heavy engine load.
3) Sustained operation at high speeds (without knocking or seizure).

CAUTION: Selection of too lean a main jet may cause severe engine overheating, and subsequent piston seizure. Fig.12 shows comparison of fuel flow curves. The straight line is for Model C main jet and the dotted line for Model A and B main jets. In each model of main jet, different sizes within the range of +10% were tried.

Figure 12



6. MAINTENANCE

A carburetor consists of various precision-machined parts such as jets, needles, valves, etc. Therefore, care should be exercised, when removing jets or disassembling the carburetor for cleaning.

1) Proper tools should be used for disassembling and reassembling of jets. Handle each part carefully to avoid scratches, bending, etc.
2) Wash the jets and the carburetor properly in solvent and blow them out with compressed air.
3) For carburetors whose main jet can be replaced from the outside, an "O" ring is used to prevent leakage of fuel. When you fit the "O" ring, apply a little lubricant or fuel.
4) It is important to maintain the fuel level in the carburetor. Do not touch the float arm, when disassembling the carburetor. If the float arm is bent accidentally, adjust the height of rib to the specific measurement (refer to Fig.18).

Figure 18

Model	VM26 −74	VM28 −49	VM30 −44	VM32 −33	VM34 −20	VM36 −4	VM38 −3	VM40 −1	VM44 −1
H (Inch) (mm)	.59~.66 15~17	.59~.66 15~17	.86~.94 22~24	.86~.94 22~24	.86~.94 22~24	.66~.74 17~19	.66~.74 17~19	.66~.74 17~19	.66~.74 17~19

Float Height information for other carburetor designs is listed within the section pertaining to that carburetor.

7. TUNING THE CARBURETOR FOR RACING

The maximum output of the engine depends on:

1) The amount of air drawn into the cylinders
2) Whether an air-fuel mixture is delivered to the cylinders in a proper ratio

Since the amount of air that is drawn into the the carburetor varies with the temperature, the atmospheric pressure, humidity, etc., the mixture ratio is also changed. It is important, therefore, that the fuel flow be adjusted in accordance with the altitude of the racing course and meteorological conditions prevailing.

A. - Incoming Air in Relation to Meteorological Conditions

The amount of air drawn into the cylinders is influenced by such factors as the altitude, the temperature, the humidity, etc. Suppose that the amount of air sucked into the cylinders at an elevation of zero is taken as 100 (the temperature and humidity in this case are considered constant). The amount of air in question decreases in proportion to a rise in elevation as shown in Fig.19. Reduction in the amount of air drawn into the cylinders changes the air-fuel mixture ratio, with the result that the power output drops markedly. Fig.20 shows the relation between a rise in temperature and the amount of air drawn into the cylinders (in this case, the atmospheric pressure (elevation) and the humidity are considered unchanged and the amount of air going into the cylinders at 32 degrees F (0 degrees C) is taken as 100). In the case of the engine for racing where the maximum output is constantly called for, it is best to tune up the engine by making a matching test of the carburetor in accordance with the temperature and other conditions on the racing course.

Figure 19

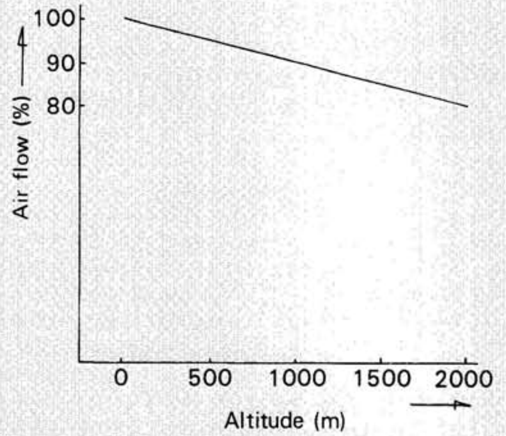
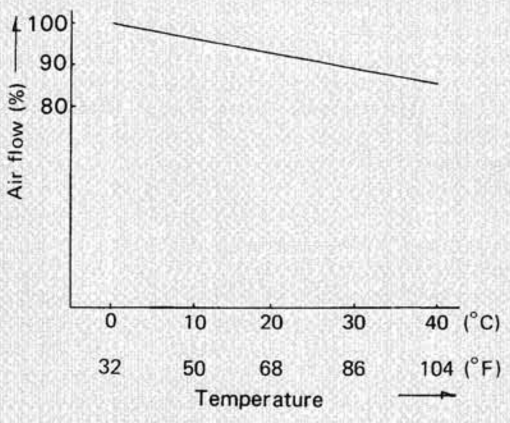


Figure 20



TROUBLESHOOTING & GENERAL PROCEDURES

When tuning motorcycle carburetors, there are several procedures and preliminary checks that will make the tuning and troubleshooting process go smoothly and quickly.

1. In order for carburetors to work properly, the engine must be in good mechanical condition. All of the following parameters should be checked in order to proceed with the carburetor tuning.

A. Compression - all cylinders should be within 10% of each other according to cranking compression.

B. Valve Adjustment / Cam Timing - check valve clearance according to the factory service manual, consult a qualified technician if there is any question about the cam timing.

C. Ignition Quality - adjust point gap and ignition timing according to the factory service manual. Double check the gap and install new spark plug prior to any carburetor tuning.

D. Air Filter Quality - Check to see that the air filter is clean and that all baffles and snorkels are in place, or have been removed as necessary for increased airflow. In any case, the air box / air filter dimensions should be finalized.

E. Exhaust System - Install all mufflers and baffles. Double check all silencer packing and baffle installations. Finalize all exhaust system specifications before moving on to the carburetors. Jetting can vary dramatically according to muffler / baffle selection.

2. All fuel delivery circuits operate according to throttle position. In order to determine which circuit to tune, one must know the throttle opening at which there is a problem. Do not use R.P.M. to determine which circuit to tune. Sudco suggests the use of a throttle index on the twist grip to track the exact throttle opening of the carburetor.

Throttle Index

A. Place a piece of masking tape across the throttle housing adjacent to the twist grip so that it is visible from the riding position.

B. Install a colored push pin or sewing pin into the throttle grip flange adjacent to the masking tape. Adjust the throttle cable free play to near zero.

C. With the throttle closed, make a "0" mark on the masking tape adjacent to the pin head on the throttle flange.

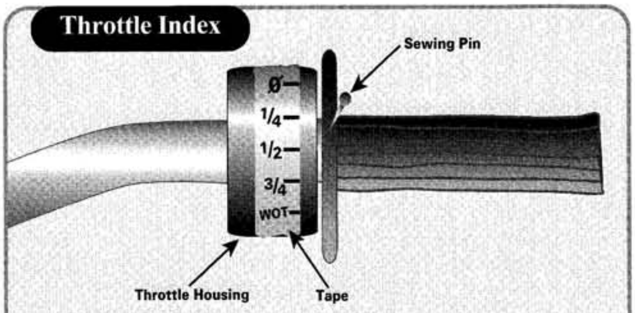
D. Open the throttle all the way and make a "W.O.T" mark on the masking tape adjacent to the pin head.

E. Using a tape measure, divide the distance between the two marks on the tape into quarters and make marks for each throttle opening on the tape. (0, 1/4, 1/2, 3/4, W.O.T.)

F. Ride the motorcycle and make mental notes regarding the carburetion according to the throttle index. If a problem is truly carburetor related, the symptoms will come and go according to the throttle position.

3. Work in progression from 0 throttle through full throttle. Motorcycle carburetor fuel circuits are additive. This means the main circuit delivery is an addition to the pilot circuit delivery. The pilot system delivers fuel at all throttle settings, therefore, the tuning of the pilot circuit will have some influence on the decisions to be made regarding the main circuit. If there is any question about the jetting of the pilot circuit it should be addressed first. After the pilot circuit has been optimized it is then possible to accurately evaluate the main circuit and it's related components.

Throttle Index

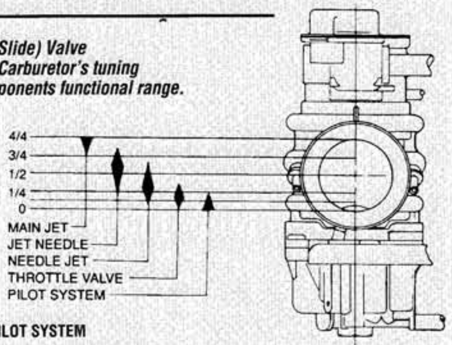


1.) Throttle Position

Component Functional Range – If re-jetting is required, first find the throttle position where there appears to be a problem. Then determine if the engine is running rich or lean by using the Symptoms Chart on page 10.

Throttle (Slide) Valve

The Carburetor's tuning components functional range.



PILOT SYSTEM

(PILOT AIR JET, PILOT FUEL JET, PILOT FUEL SCREW)

4. Altitude and Temperature

The purpose of the carburetor is to mix air and fuel in a specific ratio, by mass, in order to present a combustible mixture to the engine. Carburetors are generally flexible instruments when used to mix air and fuel in the proper ratio and will compensate for small changes in air density. It is when the altitude or temperature becomes extreme that it will be necessary to re-jet according to atmospheric conditions.

Altitude and temperature are important factors to consider when tuning carburetors for peak performance, as they directly affect air density. Notes should be taken regarding altitude and temperature changes as they occur in order to determine which way to go with carburetor adjustments.

Because air is a gas, its density is directly affected by altitude, barometric pressure, temperature and humidity. These factors will increase or decrease air density depending upon where you travel or how weather patterns develop in your riding area.

Gasoline is a liquid and cannot be compressed. Therefore, its density is not affected by altitude, temperature, or humidity.

Because air density changes according to atmospheric conditions and fuel density does not, it becomes necessary to re-jet the carburetor according to changing altitude and weather conditions. As the density or mass of air changes, it becomes necessary to change the mass of fuel mixed with the air by changing the jets which meter the fuel.

Altitude affects air density the most. All other conditions being equal, as the elevation nears zero (sea-level), the air density will be greatest and the engine will require the richest carburetor settings that it will ever use. As elevation increases, the air density becomes less and the engine will require leaner carburetor settings in order to maintain peak performance. Generally, an engine which has been tuned correctly for sea-level will not require jetting changes until about 2500' elevation.

Temperature also has an affect on air density. As air temperature nears freezing (32 degrees F), the density of air will become greater. Conversely, as temperature rises toward100 degrees F, air density becomes less. As air temperature decreases and air density becomes greater, the engine will require richer carburetor settings in order to maintain peak performance. Generally, an engine which has been tuned correctly for room temperature (72 degrees F) will not require jetting changes until the temperature change is about 20 degrees F.

How To Identify Rich or Lean Conditions

Lean Condition - A lean condition is an out of balance air / fuel mixture where there is not enough fuel in the mixture to deliver peak performance. The results of lean mixtures can vary from minor driveability problems to overheating and possible severe engine damage. Care should be taken to identify lean mixtures and correct them as soon as possible.

Typical Lean Mixture Symptoms:

1. Engine acceleration is flat or slow to pick up.
2. It becomes difficult to apply the throttle quickly or the engine picks up speed when the throttle is rolled off.
3. The engine knocks, pings, or overheats.
4. The engine surges or hunts for a stable R.P.M. while cruising at part throttle.
5. When the pilot circuit is too lean there will be popping or spitting in the carburetors as the throttle is opened. Sometimes there will be popping or backfires in the exhaust system on engine deceleration after the throttle has been closed.
6. Engine performance improves in warmer weather conditions, or engine runs poorly in cold weather.
7. Engine performance worsens when the air filter is removed.

Rich Condition - A rich condition is an out of balance air / fuel mixture where there is too much fuel in the mixture to deliver peak performance. A rich condition will result in excess carbon deposits within the combustion chamber and exhaust system, decreasing the life of the engine and related components. In addition to poor fuel economy, a rich running motorcycle will pollute excessively and contribute to environmental problems.

Typical Rich Mixture Symptoms:

1. Engine acceleration if flat, uneven, not crisp.
2. Two stroke engines will sputter or "4 stroke" and skip combustion cycles.
3. The throttle needs to be opened continuously to maintain consistent acceleration.
4. The engine performs poorly when the weather conditions get warmer, or the engine works better in cold conditions.
5. Excessive smoke from the tail pipe, black smoke from the tail pipe of four strokes.
6. Poor fuel economy.
7. Engine performance improves when air cleaner is removed.
8. When the pilot circuit is rich, the engine will idle roughly or not return to idle without blipping the throttle. The exhaust will smell of excessive fuel and burn the eyes.
9. Black, sooty or fouled spark plugs. Black and sooty exhaust tail pipes on four-strokes. Greasy and drippy tail pipes on two-strokes.

CARBURETOR TROUBLESHOOTING GUIDE

PROBLEM	POSSIBLE CAUSES	CORRECTION
HARD STARTING.	Incorrect use of choke.	Correct use of choke.
	Incorrect air-fuel mixture adjustment.	Set mixture adjustment screw in accordance with owneris manual or shop manual instructions.
	Clogged fuel filter.	Clean filter.
	Clogged low speed fuel jets.	Disassemble carburetor and chemically clean.
	Clogged vent in fuel tank cap.	Unclog vent or replace cap.
	Float stuck.	Remove float bowl, check float operation, and correct or replace.
	Float damaged or leaking.	Replace float.
	Incorrect float level.	Set float height in accordance with shop manual specifications.
	Intake air leak.	Check carburetor mounting flanges for air leaks.
	Ignition problem.	Repair, replace, or adjust as necessary.
	Low cylinder compression.	Repair, replace, or adjust as necessary.
POOR IDLE OR STALLING.	Idle speed adjustment(s) set too low.	Adjust idle RPM in accordance with specifications in owner's manual or shop manual.
	Idle speed adjustments are unequal (twin and multi-carburetor models using individual throttle stop adjustments.)	Equalize throttle stop settings.
	Clogged idle & low speed air bleed.	Disassemble carburetor and chemically clean.
	All causes listed under "HARD STARTING."	
IDLE MIXTURE ADJUSTMENT IS INEFFECTIVE. CARBURETOR DOES NOT RESPOND TO MOVEMENT OF THE IDLE MIXTURE SCREW.	Idle speed set too high.	Adjust idle speed in accordance with specifications in owner's manual or shop manual.
	Clogged low speed air-bleeds.	Disassemble carburetor and chemically clean.
	Damaged mixture adjustment needle.	Replace mixture adjustment needle.
	Mixture adjustment needle "O" ring is not sealing (models using "O" ring).	Replace "O" ring.
	Damaged mixture adjustment needle seat.	Replace carburetor.
	All carburetor problems listed under "HARD STARTING."	

CARBURETOR TROUBLESHOOTING GUIDE

PROBLEM	POSSIBLE CAUSE	CORRECTION
SLOW RETURN TO IDLE.	Idle speed set too high.	Adjust idle speed in accordance with specifications in owner's manual or shop manual.
	Idle speed adjustments are unequal (twin and multi-carburetor models using individual throttle stop adjustments).	Equalize throttle stop settings.
	Throttle valve sticking.	Clean and inspect throttle valve and return spring. Replace as necessary.
	Throttle linkage sticking	Clean and inspect throttle linkage and return spring. Lubricate, repair, or replace as necessary.
	Throttle cable binding.	Correct routing or replace cable as necessary.
ENGINE SURGES WHEN AT A CONSTANT SPEED.	Incorrect air-fuel mixture adjustment.	Low speed - Low speed jet size change. Intermediate-Jet needle height adjustment.
	Vacuum piston sticking.	Clean and inspect vacuum piston and return spring. Replace if necessary.
ENGINE DOES NOT DEVELOP FULL POWER, OR MISSES ON ACCELERATION.	Incorrect use of choke.	Correct use of choke.
	Clogged air cleaner.	Clean or replace.
	Incorrect air-fuel mixture adjustment.	Low speed - Low speed jet size change. Intermediate - Jet needle height adj. High Speed - Main jet size change.
	Throttle valves not synchronized (models with two or more carburetors)	Adjust throttle valve synchronization.
	Clogged fuel filter.	Clean filter.
	Clogged fuel jets.	Disassemble carburetor and chemically clean.
	Clogged air bleeds.	Disassemble carburetor and chemically clean.
	Fuel jets loose.	Tighten fuel jets.
	Fuel jet "0" rings leaking (models using "O" rings).	Replace "0" rings.
	Float stuck	Remove float bowl, check float operation, and correct or replace.
	Float damaged or leaking.	Replace float.
	Incorrect float level.	Set float height in accordance with shop manual specifications.
	Vacuum piston sticking.	Clean and inspect vacuum piston and return spring. Replace if necessary.
	Vacuum piston diaphragm ruptured.	Replace vacuum piston assembly.
	Ignition problem.	Repair, replace, or adjust as necessary.
	Low cylinder compression.	Repair, replace, or adjust as necessary.

CARBURETOR SYNCHRONIZATION

Motorcycle carburetor synchronization is best described as a process where it becomes necessary to keep two, three, or four engines running at exactly the same speed, where each cylinder on the motorcycle is a separate engine. In order to match the speed of each cylinder to the next, the slide lift must be exactly the same on each carburetor. Given an engine with perfect cylinder compression, ignition timing, and mixture quality, all cylinders will run at exactly the same speed when the carbs are in exact mechanical synchronization.

Synchronizing Mikuni VM, TM and TMX Single Carbs

There are two synch procedures to execute when setting up single type carbs on multis. The first is idle synch and the second is cable synch, to be done in that order.

The easiest way to start the idle synch process is to choose an arbitrary slide lift setting. Set each one at exactly the same lift with the throttle stop screw (idle speed screw). Generally a 1mm (.040") lift will be sufficient to start with. Use round wire as a feeler gauge under each slide to match the slide lifts at idle. Check the air screw/fuel screw settings and match as necessary at this time.

Mount the carburetors and attach the throttle cables. Start the engine and adjust the idle speed screws in or out, counting each 1/2 turn and setting each carburetor the same amount, bearing in mind that each slide needs to be kept at equal lift. The engine will idle smoothly when all the slides are adjusted properly. Turn the engine off.

Now that the idle synch has been established, it is possible to synch the cables that lift each slide. Using the cable adjuster mounted on each carburetor top, take out all the cable free play until the slide starts to lift off idle. Back this adjustment off until the slide just returns to idle. Do this for each carburetor. The cables are now roughly synchronized. Put a finger on the slide of the #1 carburetor and watch the slide on the #2 carburetor. Slowly twist the throttle to lift the slides, both slides should lift off idle at the same instant. If the slides are out of synch, adjust the retarded carburetor with the cable adjuster on the carb top to match the other carb. Repeat this process, matching the #3 carburetor to the #2 carburetor and so on for all of the cylinders. Check the cable free play at the twist throttle, there should be about 1mm throttle free play. Double check and tighten all lock nuts and screws as necessary.

Synchronizing Mikuni Smoothbore Carburetors

Sudco recommends that all smoothbore type carburetors be synchronized mechanically rather than with vacuum gauges or mercury manometer ("carb stick"). There are several reasons that vacuum synchronization is not recommended.

1. The synch adjustments on smoothbore carburetors are underneath the top cover of the carburetor, which when removed exposes a large vacuum leak to the cylinder being adjusted, resulting in inconsistent vacuum levels from one carb to the next.

2. The vacuum shown on a gauge is a result of several engine conditions: cylinder compression, spark quality and timing, mixture quality, and carburetor slide lift. If any one of these parameters is not perfect it will become increasingly difficult to get a consistent vacuum level, regardless of slide lift.

3. Carburetor circuitry is throttle position sensitive. If the slides are not in exact mechanical synch, then one carburetor may be operating on a different circuit than the others.

Mechanically Synchronizing Smoothbore Carburetors

1. Remove the carburetors from the engine and drain float bowls.

2. Remove the top cover from each carburetor and note which carburetor does not have a synch adjuster. Some designs will have adjusters on all the carbs, some will have a fixed or non-adjustable carb. Usually, #2 or the one closest to the throttle wheel.

3. With the carburetors on the work bench and the spigot or engine side of the carbs facing you, adjust the idle speed screw so that the slides are nearly closed.

4. Place a piece of fine wire or rod about .020" (.5mm) thick underneath the fixed adjustment carburetor slide. Use the idle speed screw to adjust the tension on the wire gauge, which should slip between the slide and carburetor bore with some slight drag. If your particular carburetor design does not have a fixed adjuster, then use the carburetor closest to the throttle cable wheel and set the idle adjuster as described above. This is now the baseline carburetor.

5. Using the same piece of wire or exact duplicates, check the slide lift of all the other carburetors against the wire gauge. If the drag on the wire gauge is not the same as the baseline carburetor, adjust the slide lift of each carburetor with the synch adjuster located at the throttle shaft/lift arm joint, so that the drag on the wire is the same as the baseline carburetor.

Sometimes, the synch adjusters are adjust nuts and lock screws, where the slide lift adjustment is made by turning the nut and then is locked in place with the screw in the center. Double check the adjust method used on your particular carburetor and proceed carefully.

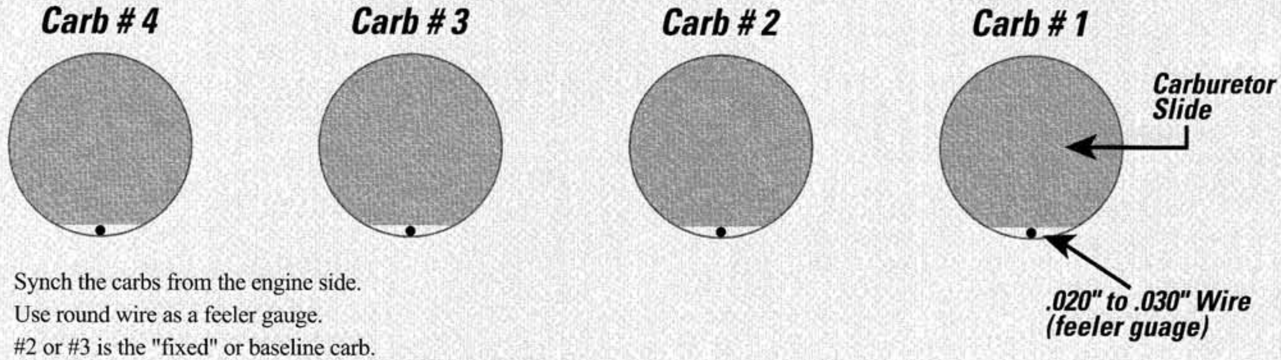
6. Once all the slides have been synchronized, open and close the throttles several times, checking for binding or sticking. Double check the synchronization at idle by sight. Turn the idle speed adjustment out and watch the clearance between the slides and their carb bores. As the clearance nears zero, any difference in slide lift will become apparent. Correct the differences as necessary.

7. Replace the carburetor tops, check the gaskets for leaks. Double check the fuel screw/air screw settings at this time, re-set to the standard specification. Install the carburetors and adjust the throttle cables for correct free play at the throttle .020" to .040" (0.5 to 1.0mm)

8. Now that the carburetors have been properly synchronized, it is possible to use a vacuum gauge or carb sticks to optimize the fuel screw/air screw settings. With the engine idling, experiment with the mixture screw while looking for an increase in manifold vacuum. The screw setting which produces the highest vacuum level is generally the correct position.

CARBURETOR SYNCHRONIZATION

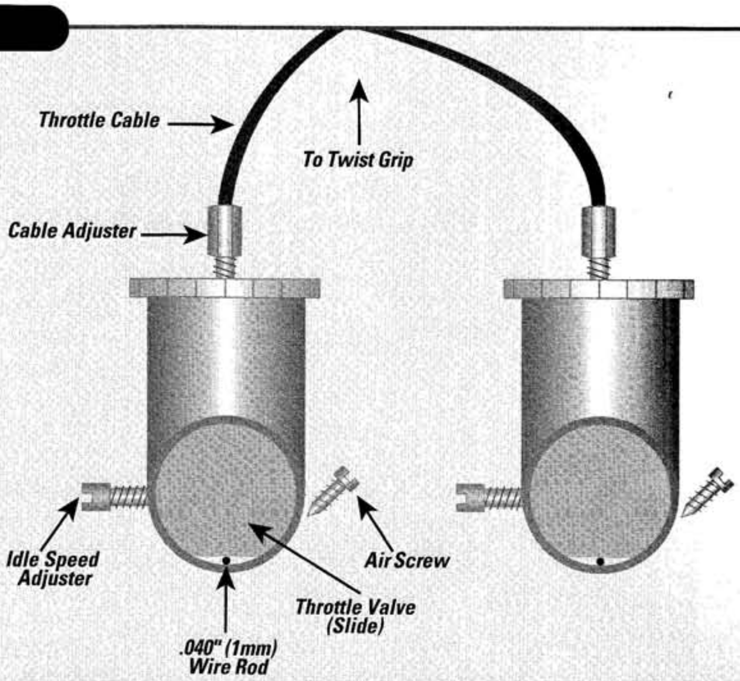
Synchronization of Smoothbore Carbs - As viewed from engine side of carbs.

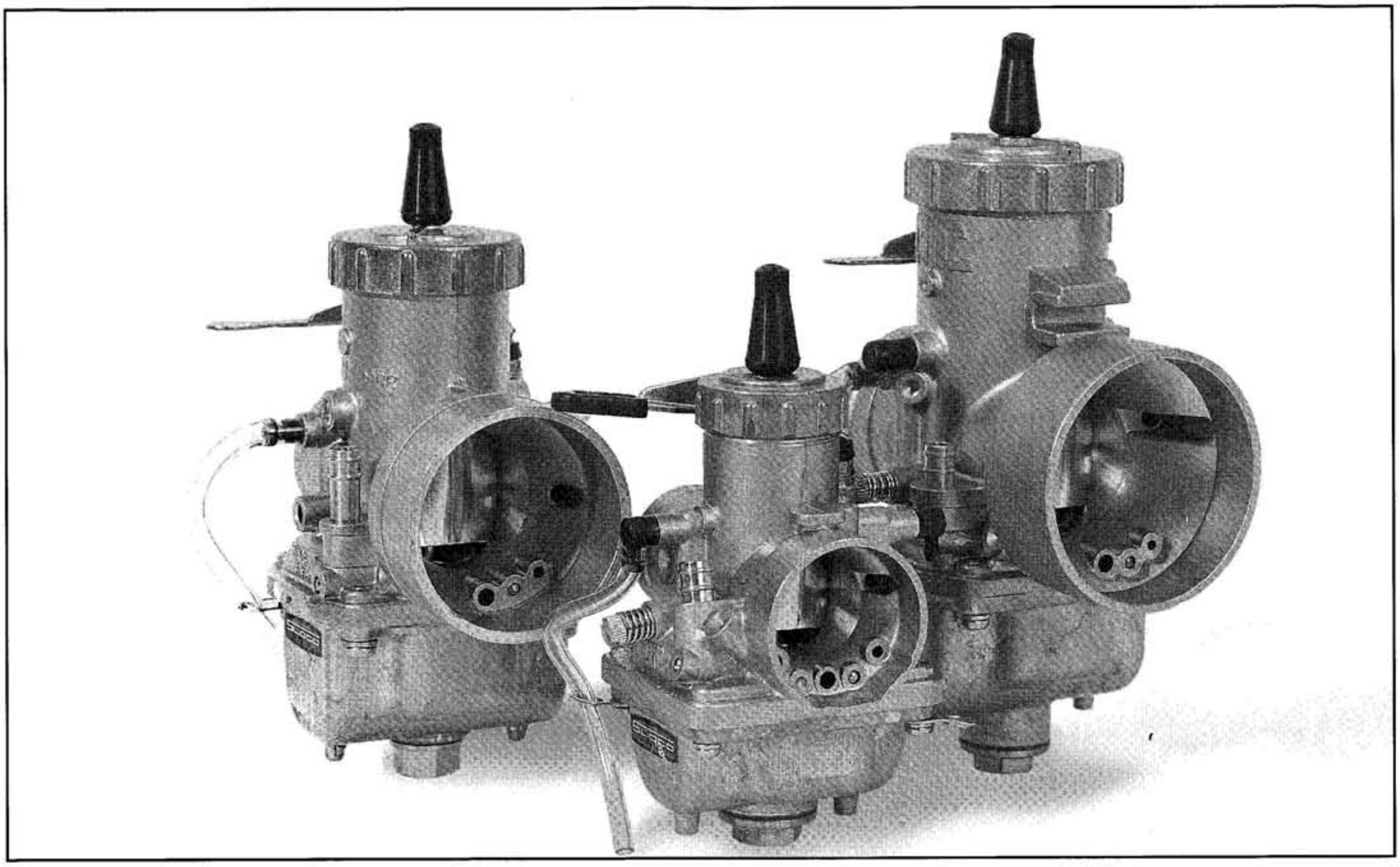

Carb # 4
Carb # 3
Carb # 2
Carb # 1
Carburetor Slide
.020" to .030" Wire (feeler guage)

1. Synch the carbs from the engine side.
2. Use round wire as a feeler gauge.
3. #2 or #3 is the "fixed" or baseline carb.
   Use idle speed adjuster to set the height against the gauge.
4. Use synch adjusters inside carb top to adjust the other carbs.
5. Carbs are in synch when all slide lifts are equal.

Single Carb Synchronization

1. Synch the carbs initially with the idle speed adjusters.
2. Adjust the engine speed for correct idle with the idle speed adjusters (keep them matched, use a vacuum gauge as necessary.)
3. Adjust cable synch with the cable adjusters, so that all slides lift off idle at exactly the same moment. Use a finger on one slide and watch the other.
4. Adjust the air screws for proper idle mixture quality. Use a vacuum gauge if necessary. Mixture is correct when vacuum is at the highest level.


Throttle Cable
To Twist Grip
Cable Adjuster
Idle Speed Adjuster
Air Screw
Throttle Valve (Slide)
.040" (1mm) Wire Rod



VM Series Round Slide Single Carburetors

These are the most popular high performance single carburetors in the sport of motorcycling. Mikuni's VM Series round slide single carburetors have proven themselves as the performance standard for use in any single cylinder motorcycle and ATV application for motocross, enduro and trail riding, to flat track racing and road racing on both 2-stroke and 4-stroke engines. Performance features for the VM Series Carburetors include a large selection of bore sizes for increased fuel mixture flow to match engine modifications. A wide range of tuning components are available to allow precise fuel mixture metering in any application, at any throttle setting, under any riding condition.

Sudco Special Set Mikuni Carburetors

Sudco can "Special Set" any Mikuni Carburetor for your particular application. Below is the information you will need to provide our Carburetor Specialist Technicians so they can provide you with the correct carburetor and jetting.

Please Note: Changes and jetting modifications are for use only on racing machines or similar off-road vehicles where pollution laws are not in effect. Not legal for vehicles operated on public highways in the State of California or other areas where similar pollution laws may apply.

1. Carburetor Size (mm)
2. Type of Carburetor (Clamp-On, Spigot Mount, Flange Mount, Flat-Slide, etc.)
3. Application (Model, Year and Cubic Centimeters)
4. Modifications on motorcycle (Explain)
5. Type of Motorcycle Use (Street, Drag, Road Race, Motocross, Enduro, etc.)
6. Type of Fuel Used
7. Climate Conditions (Indicate if high altitude)

Most popular settings are already available. However, if you have modifications, it is necessary to follow the guidelines to insure receiving the proper jetting at the closest range.

MIKUNI VM SPECIAL SET CARBS

Sudco Special Jetted Mikuni Carburetors

Sudco can "Special Jet" any Mikuni Carburetor for your particular application. Below is the information you will need to provide our Carburetor Specialist Technicians so they can provide you with the correct carburetor and jetting.
Please Note: Changes and jetting modifications are for use only on racing machines or similar off-road vehicles where pollution laws are not in effect. Not legal for vehicles operated on public highways in the State of California or other areas where similar pollution laws may apply.

1. *Carburetor Size (mm)*
2. *Type of Carburetor (Clamp-On, Spigot Mount, Flange Mount, Flat-Slide, etc.)*
3. *Application (Model, Year and Cubic Centimeters)*
4. *Modifications on motorcycle (Explain)*
5. *Type of Motorcycle Use (Street, drag, Road Race, Motocross, Enduro, etc.)*
6. *Type of Fuel Used*
7. *Climate Conditions (Indicate if high altitude)*

Most popular settings are already available. However, if you have modifications, it is necessary to follow the guidelines to insure receiving the proper jetting at the closest range.

Special Set

Left Idle Screw

	Jetting Change	T/V
VM20	**001-150**	**001-151**
VM22	**001-138**	**001-139**
VM26	**001-110**	**001-111**
VM30	**001-114**	**001-115**
VM32	**001-116**	**001-117**
VM34	**001-160**	**001-161**
VM36	**001-122**	**001-123**
VM38	**001-126**	**001-127**
VM40	**001-130**	**001-131**
VM44	**001-132**	**001-133**

Right Idle Screw

	Jetting Change	T/V Change
VM32	**001-166**	**001-167**
VM34	**001-168**	**001-169**

Power Jet Kit
002-041 MK-406 (Use for extended full throttle running.)

Cable Starter Kit
002-351 MK-412 (For remote mounting or starter control)

Snowmobile Single Carburetors

Order No.	Size	Mikuni No.
001-029	**34mm**	VM34-389
001-041	**38mm**	VM38-21
001-047	**44mm**	VM44-7

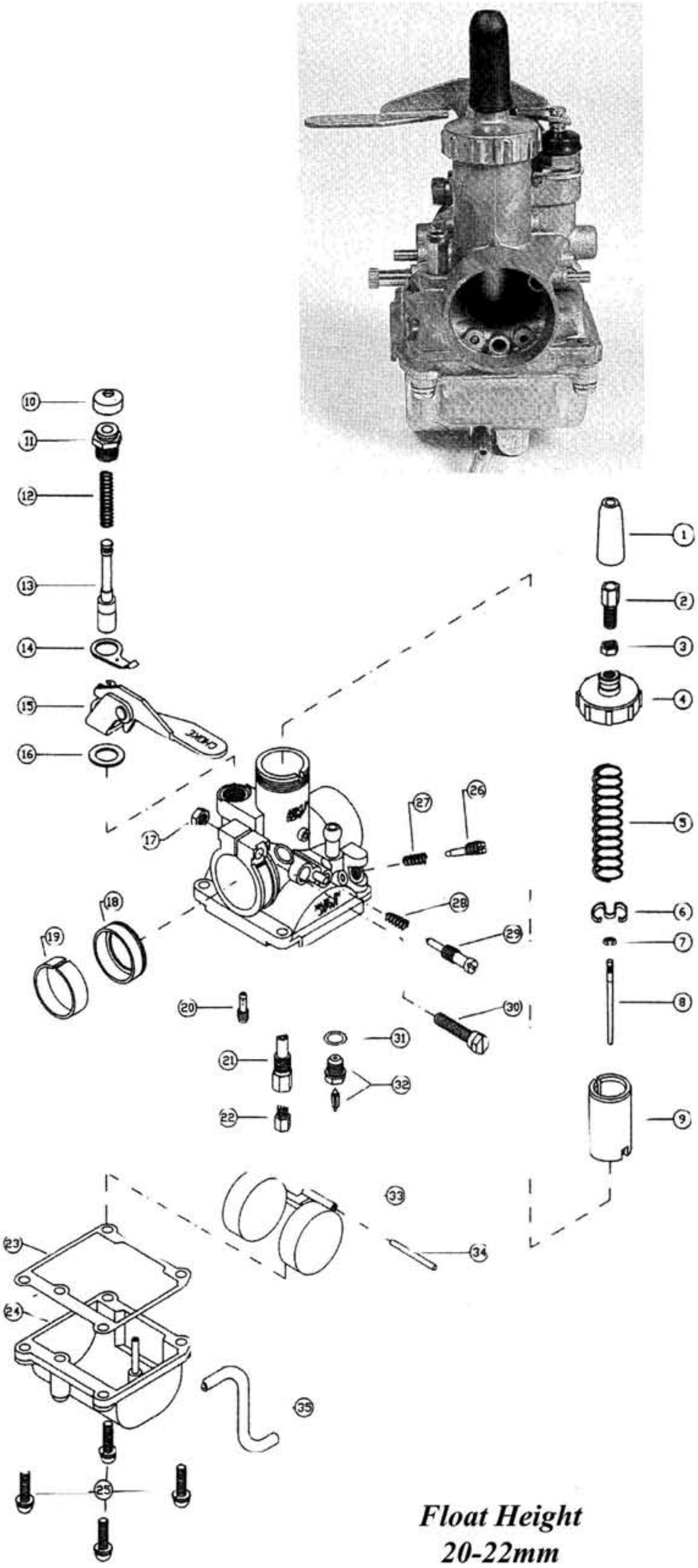
007-690
Priming Nozzle for snowmobile carb
(VM34/181)

Sudco offers specially prepared Mikuni carburetors that are designed to meet the unique demands of snowmobiles. Among these features are special throttle valve and needle valve designs which are better suited to colder, more dense air and constant throttle settings. Mikuni Snowmobile Carburetors may be fitted with Power Jet systems to assure a proper mixture control under full throttle running conditions.

see pg. 74 for VM carb kits

MIKUNI VM 18 CARB PARTS

	Description	Mikuni No.	Order No.
1	**Rubber Cap, Throttle Cable**	VM18/67	**007-685**
2	**Cable Adjuster**	M21/14	**002-062**
3	**Nut, Cable Adjuster**	B30/247	**002-065**
4	**Top, Mixing Chamber**	VM16/40	**007-273**
5	**Spring, Throttle Valve**	VM18/170	**007-274**
6	**Clip, Jet Needle Retaining**	VM18H1/38	**007-686**
7	**E-Ring, Jet Needle Positiong**	VM20/369	**002-083**
8	**Jet Needle**	J8-4F18	**See pg.70**
9	**Throttle Valve (Slide)**	VM18/158-1.0	**007-425**
10	**Rubber Cap, Starter Plunger**	VM20/455	**002-084**
11	**Fitting, Starter Plunger**	VM20/456	**002-085**
12	**Spring, Starter Plunger**	VM16/42	**002-671**
13	**Starter Plunger**	VM18/144	**002-092**
14	**Spring Plate, Starter Lever**	VM18/151	**N/A**
15	**Starter Lever**	VM18/215	**007-687**
16	**Washer, Starter Lever**	BV26/118	**N/A**
17	**Nut, Clamp Bolt**	N1=05	**007-279**
18	**Sealing Ring, Rubber**	VM18/326	**007-280**
19	**Ring, Insulator (I.D.=23mm)**	VM18/327	**007-281**
20	**Pilot Jet**	VM22/210-30	**See pg.59**
21	**Needle Jet**	VM15H1/17-0-0	**N/A**
22	**Main Jet**	4/042-80	**See pg.58**
23	**Gasket, Float Bowl**	VM17/161	**007-282**
24	**Float Bowl**	VM18/161	**007-283**
25	**Screw, Float Bowl**	CW2=0414	**002-522**
26	**Air Adjusting Screw**	VM20/305	**002-720**
27	**Spring, Air Adjusting Screw**	VM15/112	**002-863**
28	**Spring, Idle Adjusting Screw**	VM15/112	**002-863**
29	**Idle Adjusting Screw**	VM18/164	**007-284**
30	**Bolt, Clamp**	VM16/65	**007-285**
31	**Washer, Needle Valve**	VM15/07	**007-286**
32	**Needle Valve & Seat Assy.**	VM15/172-1.5	**007-288**
33	**Float**	VM17/159	**007-290**
34	**Pin, Float**	BV26/22	**002-107**
35	**Hose Overflow**	VM13/06	



Float Height
20-22mm

MIKUNI VM ROUNDSLIDE STANDARD

Standard "Left" Idle Screw Jetting Spec

All VM Series Round Slide carbs are available in Standard jetting as below.

Sudco No.	Size	Main Jet	Pilot Jet	N/J	J/N	T/V	A/J	N.V.
001-001	18mm	4/042 #80	VM22/210 #30	#145 O-0	4F18	VM18/158 3.0	None	VM15/172 1.5
001-005	20mm	4/042 #180	VM28/1001 #22.5	#239 O-6	4J13	VM20/491 2.0	0.5 (Fixed)	VM15/172 1.5
001-007	22mm	4/042 #100	VM22/210 #30	#257 N-8	4D20	VM26/21 2.0	None	VM26/26 2.0
001-020	26mm	4/042 #190	VM22/210 #60	#182 N-8	5F3	VM28/56 2.0	BS30/97 0.5	VM26/26 2.5
001-024	30mm	4/042 #250	VM22/210 #40	#159 P-5	6F5	VM34/110 2.5	BS30/97 2.0	VM34/39 3.3
001-028	32mm	4/042 #200	VM22/210 #35	#159 Q-6	6DP17	VM34/110 3.0	BS30/97 2.0	VM34/39 3.3
001-030	34mm	4/042 #260	VM22/210 #35	#159 Q-2	6DH4	VM34/110 2.5	BS30/97 2.0	VM34/39 3.3
001-035	36mm	4/042 #310	VM22/210 #35	#159 Q-5	6FJ6	VM36/36 2.5	BS30/97 2.0	VM34/39 3.3
001-040	38mm	4/042 #330	VM22/210 #30	#166 Q-2	6DP1	VM38/24 2.5	BS30/97 0.5	VM34/39 3.3
001-045	40mm	4/042 #310	VM22/210 #35	#224 AA-5	7F7	VM44/23 2.5	BS30/97 0.5	VM34/39 3.3
001-048	44mm	4/042 #310	VM22/210 #35	#224 AA-5	7F7	VM44/23 2.5	BS30/97 0.5	VM34/39 3.3

Standard "Right" Idle Screw Jetting Spec

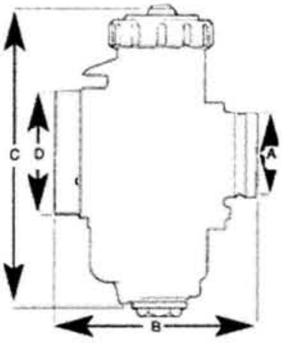
Sudco No.	Size	Main Jet	Pilot Jet	N/J	J/N	Throttle Valve	Air Jet	N.V
001-051	32mm	4/042 #200	VM22/210 #35	#159 Q-6	6DP17	VM32/65 3.0	BS30/97 2.0	VM34/39 3.3
001-052	34mm	4/042 #260	VM22/210 #35	#159 Q-2	6DH4	VM32/65 2.5	BS30/97 2.0	VM34/39 3.3

Snowmobile Single Carburetors Jetting Spec

Mikuni No.	Size	Main Jet	Pilot Jet	N/J	J/N	Throttle Valve	Air Jet	N.V
001-029	34mm	4/042 #330	VM22/210 #30	159 Q-0	6DH3	2.5	2.5 Body	1.5
001-041	38mm	4/042 #360	VM22/210 #40	166 Q-0	6DH3	VM38/24 2.5	2.5 Body	1.5 VM28/163
001-047	44mm	4/042 #540	VM22/210 #35	224 AA-5	7DH2	VM40/02 Alum. 1.5	0.7 BS30/97	1.5 VM28/163

Float Height

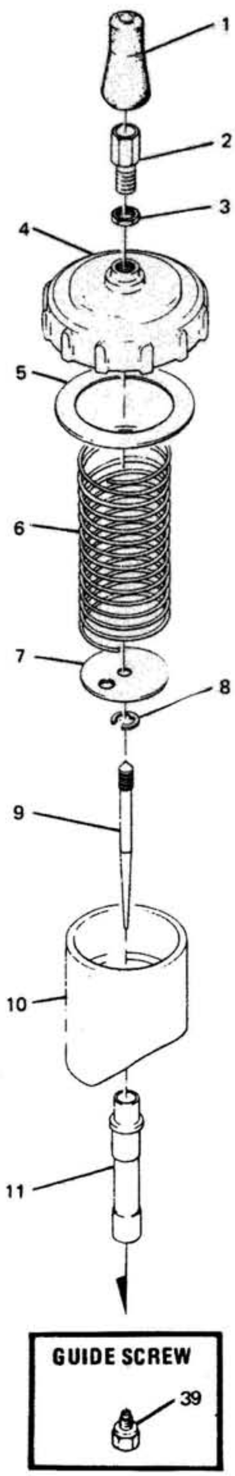
Model	Height inch	Height mm
VM26-74	**.59~.66**	**15~17**
VM28-49	**.59~.66**	**15~17**
VM30-83	**.86~.94**	**22~24**
VM32-33	**.86~.94**	**22~24**
VM34-168	**.86~.94**	**22~24**
VM36-4	**.66~.74**	**17~19**
VM38-9	**.66~.74**	**17~19**
VM40-4	**.66~.74**	**17~19**
VM44-4	**.66~.74**	**17~19**



Carburetor Dimensions

	Model	VM18	VM20	VM22	VM26	VM30	VM32	VM34	VM36	VM38	VM40	VM44
Dimension (mm)	A	Clamp On 22 ID	Flange 50.8 BOLT CTR	Flange 49 BOLT CTR	35	40	40	40	43	43	52	52
	B	67	66	85	93	93	102	93	116	116	116	116
	C	108	115	114	122	137	137	137	152	154	193	193
	D	32	43	43	44	58	58	58	62	62	70	70
	Total Width	61	76.5	82	82	83	83	83	79	79	79	79
Throttle Adjuster & Air Screw Position	**Throttle Adjuster**	Left	Left	Left	Left	Left	Left	Left	Left	Right	Left	Left
	Air Screw	Right	Left	Left	Right	Right	Right	Right	Right	Right	Right	Right
	Weight (g)	492	546		550	800	770	750	850	830	1020	1104
	Material	Alum.	Alum.	Alum.	Alum.	Alum.	Alum.	Alum.	Alum.	Alum.	Alum.	Alum.

MIKUNI VM ROUNDSLIDE EXPLODED VIEW


1
2
3
4
5
6
7
8
9
10
11
GUIDE SCREW
39

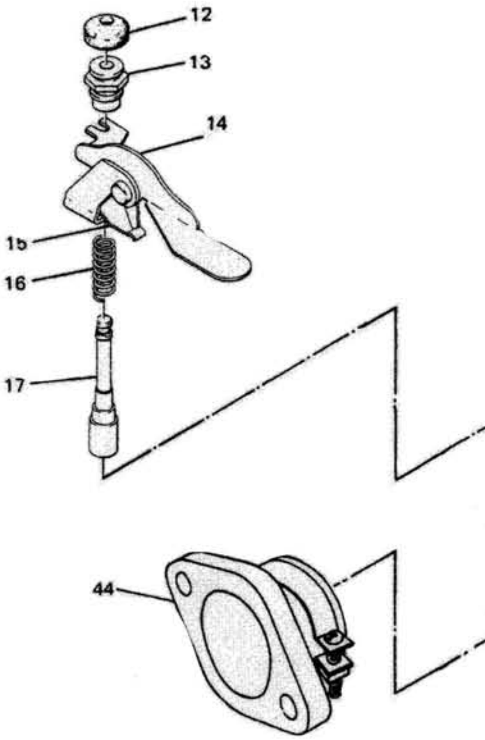

12
13
14
15
16
17
44

DIAGRAM A
EXPLODED VIEW OF A
SPIGOT MOUNT TYPE
MIKUNI CARB

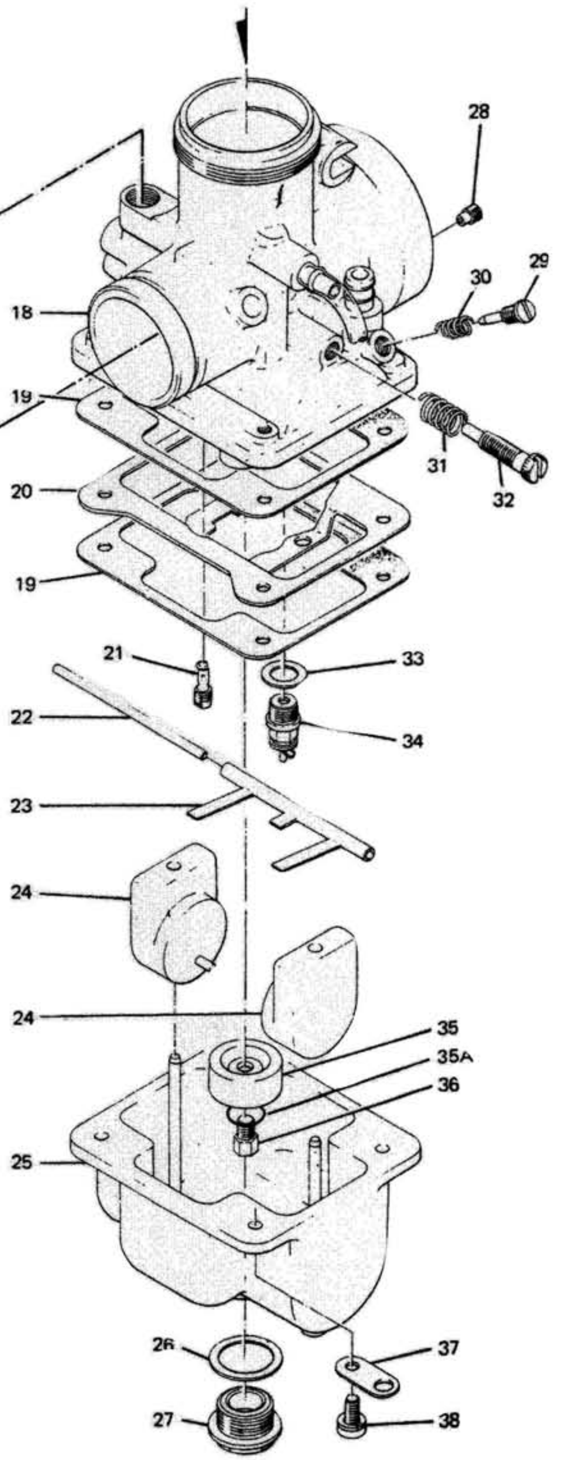
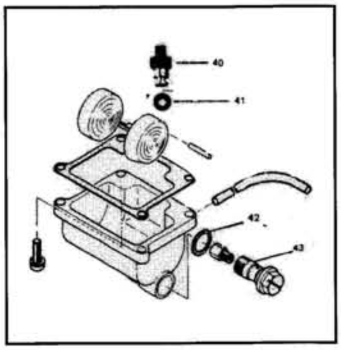

28
29
30
18
19
31
32
20
19
21
33
22
34
23
24
24
35
35A
36
25
26
37
27
38

DIAGRAM B
EXPLODED VIEW OF THE
FLANGE MOUNT FLOAT
BOWL



MIKUNI VM PARTS

1. **Throttle Cable, Rubber Cap**

002-061	VM26/46	**All Mikuni Carbs**
002-370	VM22/18	**For 45 angled cable adjuster**

2. **"A" Cable Adjuster**

002-062	M21/14	**All Mikuni Carbs (6mm)**
002-063	VM28/256	**All Mikuni Carbs (7mm)**

"B" Angled Cable Adjuster (45)

002-064	I-M22-10-3	**All Mikuni Carbs**

"C" Cable Adjuster Rubber Cap

002-370	M22/18	**All Mikuni Carbs**

3. **Cable Adjuster Locknut**

002-065	B30/247	**All Mikuni Carbs**

4. **Mixing Chamber Top**

002-066	VM34/27	**All 30-34mm**
002-067	VM36/09	**All 36 and 38mm**
002-068	VM44/05	**All 40 and 44mm**
002-235	VM26/51	**All 30mm Small Body**
002-236	VM26/56	**All 22 and 24mm**
	VM32/431	**For Banshee conversion, Blaster 34 Power Jet**

5. **Mixing Chamber Top, Gasket**
Comes with mixing chamber top

6. **Throttle Valve spring**

002-069	VM24/195	**VM28**
002-070	VM28/28	**30-34mm Spigot**
002-071	BM28/58	**VM26**
002-072	VM34/50	**30-34mm Spigot** **32-34mm Flange**
002-074	VM34/55	**All 34 and 36mm**
002-138	VM34/152	**38mm Spigot**
002-075	VM44/13	**All 40 and 44mm Spigot**
002-073	VM34/06	**"Light" Spring for 30-36mm**

7. **Spring Seat Plate**

002-077	VM26/54	**26-30mm Flange**
002-078	VM26/55	**24 and 26mm Flange**
002-079	VM28/132	**28mm Spigot**
002-080	VM34/31	**30-34mm Spigot** **32 and 34mm Flange**
002-081	VM35/09	**All 36 and 38mm Spigot**
002-082	VM44/09	**All 40 and 44mm Spigot**

8. **Needle Positioning Clip**

002-083	VM20/369	**All Mikuni Carbs**
002-455	BSW28/70	**40 and 44mm Spigot**

9. **Jet Needles**

See Chart pg. 70

10. **Throttle Valves**

See Chart pg.24-25

11. **Needle Jets**

See Chart pg 60-61

12. **Starter Plunger Rubber Cap**

002-084	VM20/455 (VM30/302)	**30-44mm Spigot**

13. **Starter Plunger Fitting**

002-085	VM20/456	**30-44mm Spigot**
002-815	VM26/116	**26-28mm Spigot**

14. **Starter Lever**

002-086	VM28/51a	**28mm Spigot**
002-135	VM28/124	**30-34mm Spigot**
002-187	VM32/53	**36-38mm Spigot**
002-136	VM36/58	**40 and 44mm Spigot**

15. **Starter Lever Spring Plate**

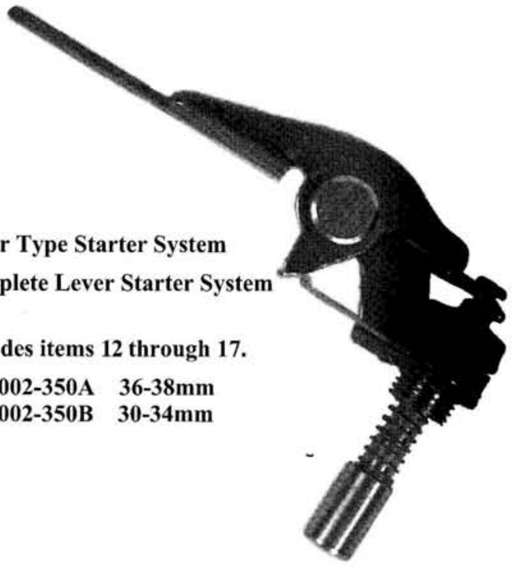
002-088	VM26/09c	**26 and 28mm Spigot**
002-089	VM32/17	**30-44mm Spigot**

16. **Starter Plunger Spring**

002-090	VM14SC11/89	**26-44mm Spigot**
002-358	VM15SC6/89	**24-34mm Flange**

17. **Starter Plunger**

002-091	VM15/62	**24 and 26mm Flange** **26 and 28 Spigot**
002-092	VM18/144	**30-44mm Spigot** **30-34mm Flange**



Lever Type Starter System

Complete Lever Starter System

includes items 12 through 17.

002-350A	**36-38mm**
002-350B	**30-34mm**

18. **Mixing Chamber Body (not available)**

19. **Float Bowl Gasket**

002-099	VM28/18	**26 - 34mm Flange**
002-100	VM34/30 (999-631-011)	**30 - 34mm Spigot** **(without baffle plate)**
002-101	VM34/71 (999-631-010)	**30 - 34mm Spigot** **(with baffle plate)**
002-102	VM36/20	**36 - 44mm Spigot**
002-103	VM30/172	**30 Small Body**
002-361	VM28/129	**28mm Spigot**

20. **Float Bowl Baffle Plate**

Prevents air bubble from developing in the fuel contained in the float bowl assembly by restricting the sloshing action of the fuel when crossing over rough terrain or when leaning the vehicle. Air bubbles would cause an inconsistent fuel-air mixture.

002-104	VM34/72	**30 - 34mm Spigot**
002-362	VM34/114	**30 - 34mm Spigot**

(standard replacement)

002-105	VM36/16	**36 and 38mm Spigot**
002-106	VM44/12	**40 and 44mm Spigot**

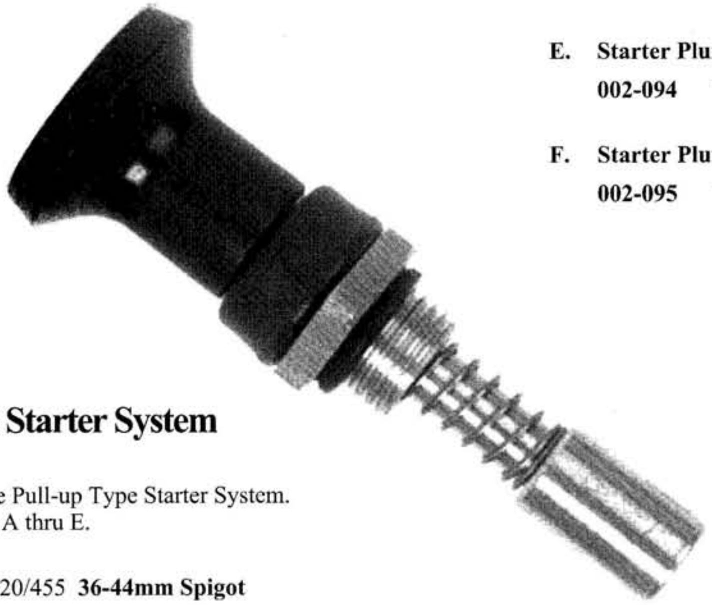
21. **Pilot Jet (see chart pg. 59)**

22. **Float Arm Hinge Pin**

002-107	VM26/22	**26 - 28mm Spigot** **24 - 34mm Flange**
002-605	VM30/160	**30 - 44mm Spigot**

23. **Float Arm**

002-108	VM28/59	**26 - 34mm Flange**
002-109	VM28/166	**28mm Spigot, 30 SB**
002-110	VM34/41	**30 - 34mm Spigot**
002-111	VM34/73	**30 - 34mm Spigot**
002-112	VM36/15	**36 - 44mm Spigot**



Pull-Up Type Starter System

002-352 Complete Pull-up Type Starter System. Includes items A thru E.

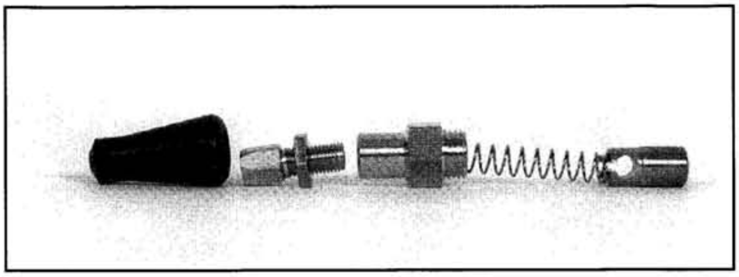
A. **Rubber Cap**
002-084 VM20/455 **36-44mm Spigot**

B. **Clip**
002-096 VM14SC11/99 **36-44mm Spigot**

C. **Starter Plunger Fitting**
002-097 VM20/300 **36- 44mm Spigot**

D. **Starter Plunger Spring**
002-090 VM14SC11/89 **36-44mm Spigot**

E. **Starter Plunger**
002-098 VM38/06 **36 - 44mm Spigot**



Cable Type Starter System

002-351 Complete Cable Type Starter System. Includes items A thru F.

A. **Starter Plunger Top, Rubber Cap**

002-061	VM26/46	**30 - 44mm Spigot**

B. **Cable Adjuster**

002-062	M21/14	**30 - 44mm Spigot** **30 - 34mm Flange**

C. **Cable Adjuster Locknut**

002-065	B30/247	**30 - 44mm Spigot** **30 - 34mm Flange**

D. **Starter Plunger Fitting**

002-093	VM15/37	**30 - 44mm Spigot** **30 - 34mm Flange**

E. **Starter Plunger Spring**

002-094	VM32/69	**30 - 44mm Spigot** **30 - 34mm Flange**

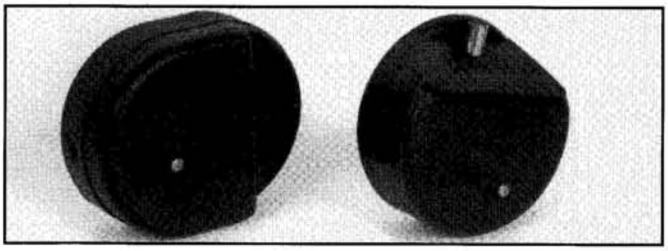
F. **Starter Plunger**

002-095	VM15SC4/85	**30 - 44mm Spigot** **30 - 34mm Flange**

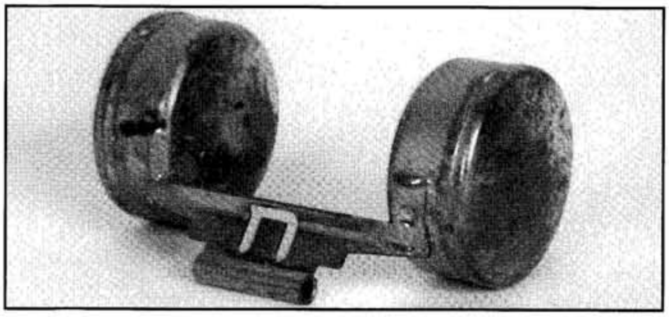
24. Float

Two Basic Types of Float Systems

002-113	VM24/236	**26-30mm Flange, Type A 36-44mm Spigot**
002-117	VM32/55	**32mm Flange, Type A**
002-118	VM34/36	**30-34mm Spigot, Type A**
002-119	VM34/61	**30-34mm Spigot, Type A (with baffle plate)**
002-116	VM28/164	**26-28mm Spigot, Type A**



A. Independent type -- non-corrosive plastic compound. Standard in 26 - 44mm Spigot and Flange type carburetors. Each of the two floats rise and fall independently. This type of float system maintains a constant fuel level in the float bowl during acceleration and deceleration.



B. Twin float type -- Brass composition. Standard in 18 - 24mm Flange and Clamp-on type carburetors. The floats do not act independently. They act as a unit. This design type uses minimum amount of space and is ideal for smaller carburetors.

002-114	VM24/171	**24-26mm Flange, Type B**

25. Float Bowl

002-121	VM34/68	**30 - 34mm Spigot with**
002-123	VM30 (Sm. Body)	overflow vent tube
002-122	VM36/07	**36 and 38mm Spigot**
002-120	VM44/04	**40 and 44mm Spigot**

25a. Float Bowl with Adjustable Metering Needle

Outside adjustment mechanism -- consisting of an adjustable needle with a tapered seat which meters the fuel, and acts as a fine tuning adjuster for the main jet, enabling the user to lean or enrich the fuel mixture.

002-125	VM36-102-B	**36 and 38mm Spigot**

(comes with O-ring BV32/04 and Needle Jet Setter VM36/55)

26. Main Jet Plug Washer

002-127	4/053	**30 - 38mm Spigot**
002-128	VM28/134	**28, 40 and 44mm Spigot**

27. Main Jet Plug

002-130	VM28/133	**28, 40 and 44mm Spigot**
002-131	VM34/42	**30 - 34mm Spigot**
002-132	VM36/14	**36 and 38mm Spigot**
002-133	VM26/160	**30mm Small Body Spigot**
002-134	VM38/08	**30 - 34mm Spigot (deep type plug)**

28. Air Jet pg. 59

Meters the air flow through the passage to and into the needle jet. It acts as a fine tuning component in regulating the fuel-air mixture. This is especially important when a bleed type needle jet is used.

29. Air Adjusting Screw

Adjusts air into the passage through the pilot jet which controls the engine starting and idling. The screw should be turned out for leaner fuel mixture and turned in for richer fuel mixture.

002-180	VM20/214	**26 - 44mm Spigot 24 - 34mm Flange**

30. Air Adjusting Screw Spring

002-181	M12F/46A	**26 - 44mm Spigot 24 - 34mm Flange**

31. Idle Adjusting Screw Spring

002-182	M20/11	**26 - 44mm Spigot 24 - 34mm Flange**

32. Idle Adjusting Screw

002-139	VM28/142	**30mm Spigot**
002-183	VM22/171	**30mm Flange 36 and 38mm Spigot**
002-184	VM24/224	**28, 34, 40 and**
	Idle Conversion for Yamaha Banshee, Blaster	**44mm Spigot**

24. 34mm Flange

002-186	VM30/170	**30mm Small Body Spigot**
002-065	B30/247	**Lock Nut**

33. Needle Valve Washer

002-187	B34/52-.05	**30 - 44mm Spigot**
002-188	VM26/25	**24 - 30mm Flange 28mm Spigot**

34. Needle Valve (Needle & Seat Assembly)

Regulates the flow of fuel from the gas tank to the float bowl assembly. It remains open until there is a sufficient amount of fuel in the float bowl. It is closed by the float system.

The various sizes of needle valves determine the rate of fuel flow. The larger the size number, the greater the fuel flow at a given time.

002-230	VM26/26	1.0	**20 - 30mm Flange**
002-231		1.5	**26 and 28mm Spigot**
002-189		2.0	**BN38 and 44mm**
002-190		2.5	**VM30 Small Body**
002-191		2.8	
002-192	VM34/39	3.0	**30 - 44mm Spigot**
002-193		3.3	**32 and 34mm Flange**
002-194	VM28/163	1.0	**30 - 44mm Spigot**
002-195		1.2	**32 and 34mm Flange**
002-196		1.5	
002-197		1.8	
002-198		2.0	
002-199		2.5	
002-200	VM38/11	3.5	**30 - 44mm Spigot**
002-233	VM28/511	1.5	**30 - 38mm Spigot**
	(Viton Tip) Snow OEM Applications		
002-895		1.8	
002-896		2.0	

35. Main Jet Ring

Acts as a cup around the main jet to prevent breaking and bubbling of fuel when crossing rough terrain or leaning the vehicle.

002-201	VM28/228	**28, 40 and 44mm Spigot**
002-202	VM36/17	**30-38mm Spigot**

35a. Main Jet Washer

002-203	VM20/169	**All Mikuni Carburetors without main jet ring**

36. Main Jet (see chart) pg.58

37. Vent Tube Anchor Plate

002-204	VM28/79a	**28-44mm Spigot**
002-205	VM15/164	**24-34mm Flange**

38. Float Bowl Screw

002-206	C2=0518	**30-44mm Spigot**

39. Guide Screw

Comes in certain carburetors only. It extends the needle jet to allow a larger needle to operate without hitting the main jet. It also performs the same function as a main jet ring.

002-207	VM38/09	**38mm Spigot with Needle Jet #166 & #159 (Hex Main Jet)**
002-208	VM38/03	**38mm Spigot with Needle Jet #196 (Round Main Jet)**

40. Needle Jet Setter - Holds the Needle Jet in position.

002-209	VM28/53	**26-34mm Flange**
002-210	VM24/250	**22 and 24mm Flange**
002-211	VM36/55	**30-44mm Spigot with adjustable float bowl**

41. Needle Jet Setter O-Ring

002-212	BV32/04	**22-34mm Flange**

42. Banjo Bolt Washer

002-213	VM26/125	**22mm Flange**
002-214	VM26/124	**24-34mm Flange**
002-215	30BIC/35	**30mm Flange**
002-239	VM15/80A	**28mm Spigot**

43. Banjo Bolt

Holds the main jet in position. It allows the rider to change the main jet from a more convenient angle.

002-216	VM24/286	**22 and 24mm Flange**
002-217	VM28/61A	**26-34mm Flange**

44. Rubber Flange Adapter (with clamp)

002-050	I-VM28-200-1	**26 and 28mm Spigot**
002-053	I-VM34-200-1	**30-34mm Spigot**
002-054	I-VM36-200-1	**36 and 38mm Spigot**
002-057	I-VM44-200-1	**40 and 44mm Spigot**

(see below for additional rubber flange)

45. Snowmobile Type Rubber Flange Adapter (with clamp)

002-051	I-VM30-200-1	**26 and 28mm Spigot**
002-052	VM32/205	**30-34mm Spigot**
002-055	I-VM38-200-1	**36 and 38mm Spigot**
002-056	I-VM40-200-1	**40 and 44mm Spigot**

See dimension chart below

Flange O-Ring

002-218	VM30/13	**26-30mm Flange**
002-219	VM32/09	**32 and 34mm Flange**

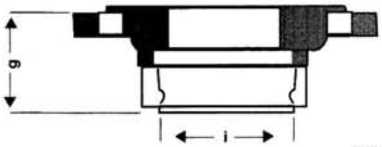
Fuel Pump (Snowmobile)

002-220	DF44-211-D	**Single Fuel Pump**
002-221	DF52-21	**Dual Outlet Pump**

(see pg. 72 for additional fuel pumps)

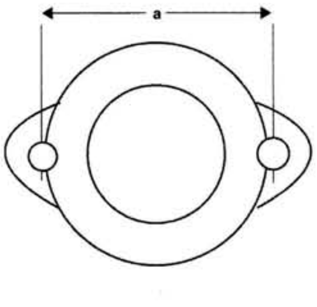
Throttle Cables

657-900	Standard Throttle Cable (Harley)
657-901	90° Throttle Cable for Fat boy tank clearance
657-902B	Magura (314) Replacement Cable
005-225	Magura Universal 314 Duo Throttle
002-025	2 into 1 Cable for Accelerator Pump or any twin cylinder (RD400, Norton, Triumph, Banshee, RZ350, etc.)
005-230	Push-Pull Throttle Assembly (for all 4-cylinder Smoothbores)



Mikuni Rubber Mounting Flanges

Diagram and Dimensions (mm)

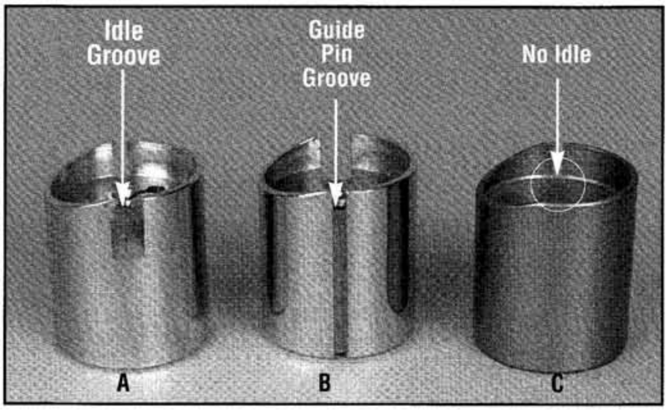


Order No.	Mikuni No.	8.5mm Bolt Hole Center (a)	Carb Bore Size	Carb Spigot Diameter (i)	Flange Throat Depth (g)	Typical Carb Size
002-050	I-VM28-200-1	60	30	35	28	26-28
002-051	VM30-288-1	57.2	30	37	23	26-28
002-052	VM32/205	75	34	40	32	30-34
002-053	VM34/200-1	60	34	40	25	30-34
002-054	I-VM36-200-1	70	40	43	25	36-40
002-055	I-VM38/200-1	74.6	38	43	28	36-38
002-056	I-VM40-200-1	75	46	52	32	40-44
002-057	I-VM44-200-1	84	46	52	25.5	40-44
002-986	KHS-004	70-75	40	43	28	36-40
007-460	HS42/018-42	83	42	43	35	42
007-461	HS42/018-45	83	45	48	35	45
007-467	HS42/062-48	85	48	52	35	48

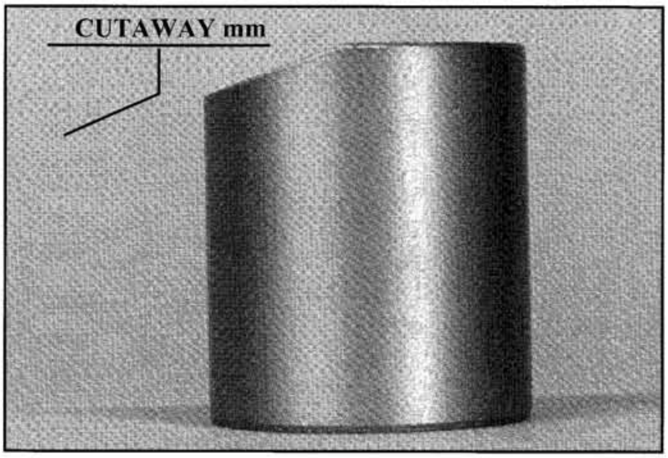
MIKUNI VM ROUNDSLIDE THROTTLE VALVES

Throttle Valve (slide)

The throttle valve affects the air-fuel mixture ratio between 1/8 and 1/2 throttle, and especially between 1/8 and 1/4 throttle. Three types of Throttle Valves are as follow:



A: Left Idle B: Right Idle C: No Idle

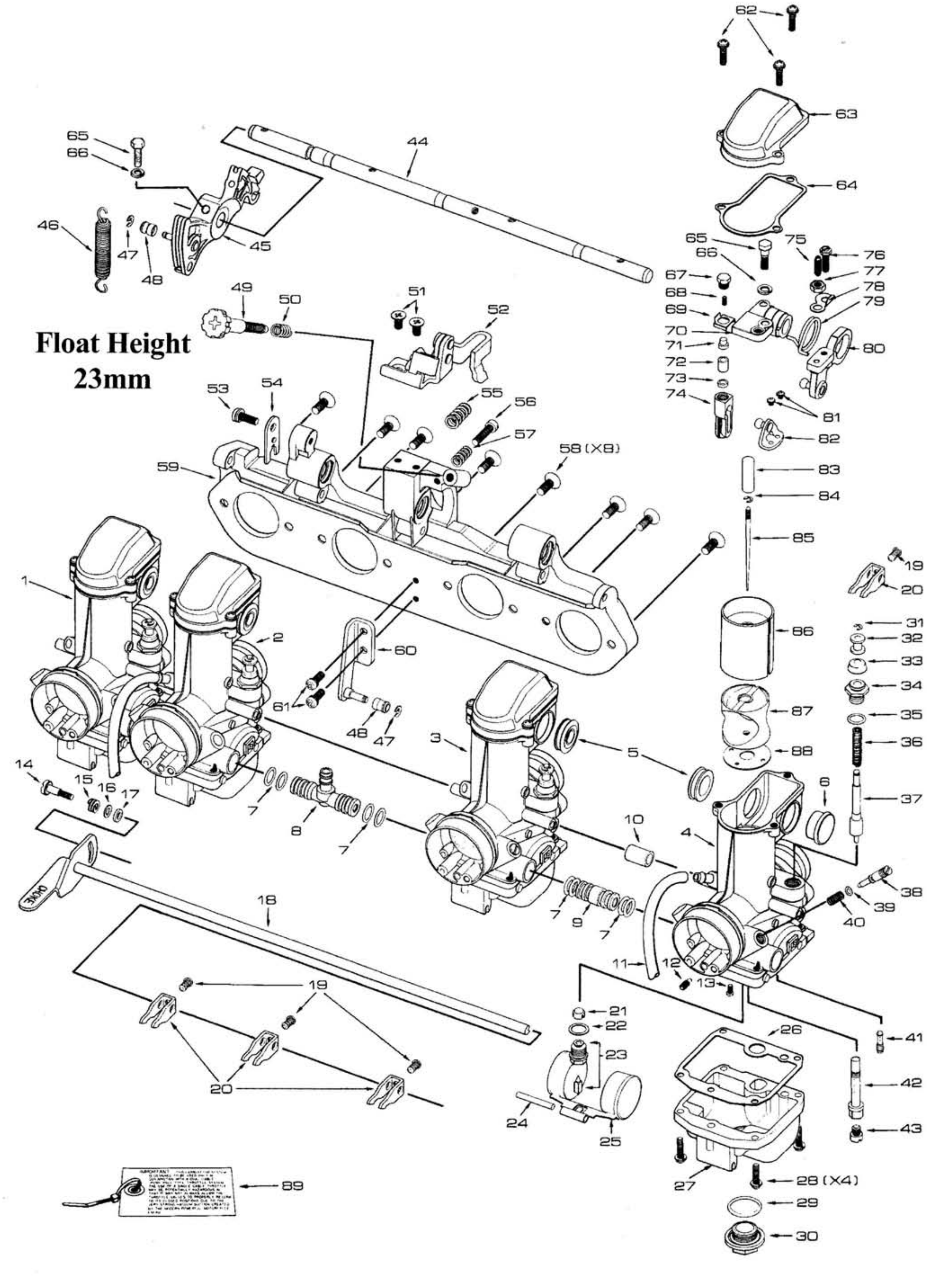


Throttle valves come in various sizes called cutaways. The larger the cutaway (size), the leaner the fuel mixture. The smaller the cutaway (size), the richer the fuel mixture. Sizes 3.5 mm to 0.5 mm.

Order No.	Mikuni No Cutaway	Composition	Idle Groove Position	Guide Pin Position	Guide Pin Groove Type	Width	Application
003-004	VM26 / 21 2.0	ALUMINUM	LEFT	RIGHT	NARROW	2.05	24 & 26 Clamp-on 24 & 26 Flange
003-005	2.5						
003-009	1.0	BRASS	LEFT	RIGHT	NARROW	2.05	26 & 28 Spigot
003-010	1.5						
003-011	VM 28 / 56 2.0						
003-012	2.5						
003-022	VM28 / 19 2.0	ALUMINUM		RIGHT	NARROW	2.05	28 Clamp-on
003-026	VM28 / 80 0.5	ALUMINUM	LEFT	RIGHT	NARROW	2.05	24 & 30 Flange 28 Clamp on
003-027	1.0						
003-030	2.5						
003-031	3.0						
003-032	3.5						
003-033	VM28 / 81 0.5	ALUMINUM	RIGHT	LEFT	NARROW	2.05	28 & 30 Flange 28 Clamp on
003-034	1.0						
003-035	1.5						
003-036	2.0						
003-037	2.5						
003-038	3.0						
003-039	3.5						
003-040	VM28/90 1.5	ALUMINUM		RIGHT	NARROW	2.05	28 & 30 Flange 28 Clamp on
003-041	2.0						
003-042	2.5						
003-043	3.0						
003-044	3.5						
003-052	VM28/210 1.0	ALUMINUM		RIGHT	NARROW	1.98	Z1, 1972-74
003-053	1.5						
003-055	2.5						
003-056	3.0						
003-057	VM28/490 1.0	ALUMINUM		RIGHT	NARROW	1.98	Z1, KZ900
003-058	1.5						
003-059	2.0						
003-060	2.5						
003-062	VM30/120 2.0	BRASS	LEFT	RIGHT	NARROW	2.05	28 & 30 Flange 28 Clamp on
003-065	VM32/06 1.0	ALUMINUM		RIGHT	NARROW	2.05	20, 32, 34 Spigot 32 & 34 Flange
003-066	1.5						

Order No.	Mikuni No Cutaway	Composition	Idle Groove Position	Guide Pin Position	Guide Pin Groove Type	Width	Application
003-070	VM32/22 0.5	ALUMINUM	LEFT	RIGHT	NARROW	2.05	30, 32, 24 Spigot
003-072	1.5						
003-073	2.0						
003-075	3.0						
003-077	VM32/23 1.0	ALUMINUM	RIGHT	LEFT	NARROW	2.05	30, 32, 34 Spigot
003-082	3.5						
003-084	VM32/65 2.0	BRASS	RIGHT	LEFT	WIDE	2.60	30, 32, 34 Spigot 32 & 34 Flange
003-085	2.5						
003-086	3.0						
003-088	VM30/176 1.5	BRASS	LEFT	RIGHT	WIDE	2.05	30 Small Body Spigot
003-089	2.0						
003-090	2.5						
003-091	3.0						
003-098	VM34/110 1.0	BRASS	LEFT	RIGHT	WIDE	2.60	30, 32, 34 Spigot 32 & 34 Flange
003-099	1.5						
003-100	2.0						
003-101	2.5						
003-102	3.0						
003-103	3.5						
003-104	VM36/13 0.5	BRASS	LEFT	RIGHT	NARROW	2.05	36 Spigot
003-105	1.0						
003-106	1.5						
003-109	3.0						
003-110	3.5						
003-116	VM36/18 3.5	BRASS	RIGHT	LEFT	NARROW	2.05	36 Spigot
003-121	VM36/26 3.5	BRASS	RIGHT	LEFT	NARROW	2.60	36 Spigot
003-123	VM36/36 1.0	BRASS	LEFT	RIGHT	WIDE	3.05	36 Spigot
003-124	1.5						
003-125	2.0						
003-126	2.5						
003-127	3.0						
003-128	3.5						
003-182	VM36/39 2.5	BRASS	RIGHT	LEFT	WIDE	3.05	36 Spigot
003-183	3.0						
003-130	VM38/02 1. 0	BRASS	RIGHT	LEFT	NARROW	2.05	38 Spigot
003-140	VM38/10 3.5	BRASS	LEFT	RIGHT	NARROW	2.05	38 Spigot
003-144	VM38/24 2.0	BRASS	RIGHT	LEFT	WIDE	3.05	38 Spigot
003-145	2.5						
003-146	3.0						
003-147	3.5						
003-149	VM38/52 2.0	BRASS	LEFT	RIGHT	WIDE	3.05	38 Spigot
003-150	2.5						
003-151	3.0						
003-154	VM40/02 1.0	ALUMINUM	LEFT	RIGHT	WIDE	3.05	40 & 44Spigot
003-155	1.5						
003-156	2.0						
003-157	2.5						
003-158	3.0						
003-159	3.5						
003-161	VM44/08 1.5	ZINC	LEFT	RIGHT	NARROW	2.50	40 & 44 Spigot
003-162	VM44/23 1.5	BRASS	LEFT	RIGHT	WIDE	3.05	40 & 44 Spigot
003-163	2.0						
003-164	2.5						
003-165	3.0						
003-166	3.5						

MIKUNI VM29 SMOOTHBORE CARB EXPLODED VIEW


Float Height 23mm

62
63
65
66
44
64
46
47
48
45
75
76
77
78
79
67
68
69
70
71
72
73
74
80
81
82
49
50
51
52
53
54
55
56
57
58 (X8)
59
83
84
85
19
20
1
2
60
61
86
31
32
33
34
35
36
37
48
47
3
5
87
88
14
15
16
17
7
8
7
10
6
4
38
39
40
18
7
9
7
11
12
13
19
20
21
22
23
26
41
42
24
25
43
27
28 (X4)
29
30
89

MIKUNI VM29 SMOOTHBORE CARB PARTS

***Please note : The following is for parts reference only. This Mikuni carb is no longer in production.**

Item No.	Order No.	Mikuni Part No. & Description
1.	N/A	VM29SS1/01b Mixing Body
2.	N/A	VM29SS2/01b Mixing Body
3.	N/A	VM33SS3/01c Mixing Body
4.	N/A	VM33SS31/01b Mixing Body
5.	002-510	VM24/489 Seal, Rubber
6.	N/A	VM28/559 End Cap, Rubber
7.	002-617	BV40/30 O-Ring
8.	N/A	VM26/268 Fuel Joint
9.	N/A	VM26/269 Fuel Joint
10.	N/A	VM26/308 Hose, Rubber
11.	N/A	VM15/217 Hose, Rubber Air Vent
12.	N/A	BS 30/97 Air Jet
13.	N/A	CW2=0307 Screw w/ Lock Washer
14.	N/A	VM28/269 Screw (Starter Lever)
15.	002-665	VM28/293 Spring (Starter Lever)
16.	003-664	VM28/449 Washer (steel)
17.	N/A	VM28/268 Washer (Nylon)
18.	002-511	VM24/462 Shaft Starter
19.	N/A	VM28/360 Screw (Starter Lever)
20.	002-660	VM26/435 Starter Lever
21.	002-606	VM18/233 Filter
22.	002-187	B34/52 0.5 Washer, Valve Seat
23.	002-503	N122.032 2.5 Needle Valve
24.	002-107	BV26/22 Float Pin
25.	002-501	VM26/260 Float assembly
26.	002-502	VM26/258 Gasket, Float Chamber
27.	N/A	VM29/20-100 Float Chamber
28.	002-615	CW2=0416-B Screw w/ Lock Washer
29.	002-531	VM28/254 O-Ring (Drain Plug)
30.	002-526	VM28/253 Drain Plug
31.	N/A	KP/13 E-Clip (Starter Plunger)
32.	N/A	VM28/450 Bushing, Nylon
33.	002-084	VM20/455 Cap, Rubber
34.	N/A	VM28/359 Fitting, Starter Plunger
35.	002-672	VM18/249 O-Ring, Starter Plunger
36.	002-671	VM16/42a Spring, Starter Plunger
37.	N/A	VM24/510 Starter Plunger
38.	002-506	VM26/288 Pilot Air Screw
39.	002-676	VM14/75 O-Ring
40.	002-181	M12F/46a Spring, Pilot Screw
41.	Pg.59	VM22/210 Pilot Jet
42.	N/A	VM29/16 Needle Jet
43.	Pg. 58	N100/604 Main Jet
44.	002-513	VM29/11 Throttle Shaft
45.	N/A	VM24/533 Lever, Throttle
46.	N/A	VM24/536 Spring, Throttle Return
47.	002-355	BSW28/70 E-Ring
48.	N/A	VM24/532 Ring, Throttle Lever
49.	N/A	VM26/436 Screw, Idle Adjusting
50.	N/A	BNO42/31 Spring, Idle Adjusting
51.	002-637	C5-0510 Screw, Bracket
52.	N/A	VM24/466 Bracket, Throttle Cable
53.	002-516	CW2=0514-B Screw w/Lock Washer
54.	002-517	VM28/498 Plate
55.	N/A	BN38/341 Spring Shock
56.	N/A	N115.053 Screw, Throttle Adjuster
57.	002-655	N110.209 Spring, Throttle Adjuster
58.	N/A	C5=0614 Screw
59.	N/A	VM24/460 Back Plate
60.	002-533	VM24/513 Bracket, Throttle Spring
61.	002-516	CW2=0514-B Screw w/ Lock Washer
62.	002-522	CW2=0414 Screw w/ Lock Washer
63.	N/A	VM24/507 Mixing Chamber Top
64.	002-524	VM28/549 Gasket M.C. Top
65.	002-519	VM28/230 Bolt
66.	002-520	W4=05-B Lock Washer
67.	N/A	VM29/04 Cap Screw
68.	N/A	B21/29 Spring
69.	N/A	VM28/233 Lock Washer Plate
70.	N/A	VM28/554 Lever Pull
71.	N/A	VM28/195 Pin (top)
72.	N/A	VM29/05 Pin (bottom)
73.	N/A	VM29/06 Plate
74.	N/A	VM29/07 Connector
75.	N/A	VM28/593 Adjusting Screw
76.	N/A	B2=0416 Bolt, Link Lever
77.	N/A	N3=05 Nut
78.	N/A	VM28/594 Plate, Set
79.	N/A	VM28/592 Spring
80.	N/A	VM29/17 Link Lever Assembly
81.	002-527	CW2=0305 Screw w/ Lock Washer
82.	N/A	VM29/08 Bracket, Connecting
83.	002-515	VM29/14 Pin, Needle Retaining
84.	002-083	VM20/369 E-Ring
85.	002-268	J8-5DL31 Jet Needle
86.	N/A	VM29/15 Throttle Valve (see chart)
87.	N/A	VM29/10 Jet Block
88.	N/A	VM29/13 Gasket, Jet Block
89.	N/A	VM33/78 Warning Tag

Needle Valve Assembly

002-503	2.5	**N122.032**
002-504	2.8	**N122.032**

Throttle Valves

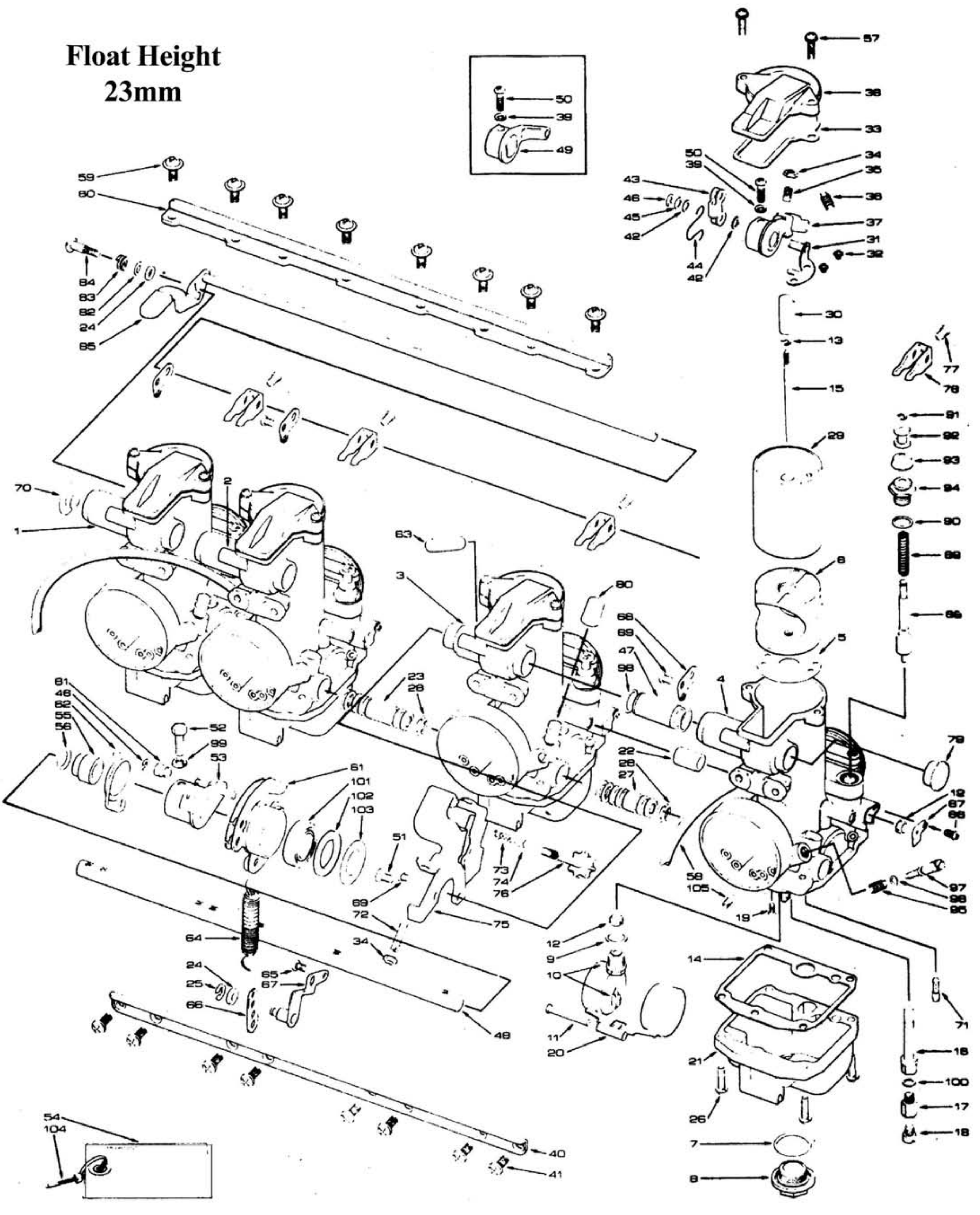
CUTAWAY	PART#
1.5	**003-168**
2.0	**003-169**
2.5	**003-170**

Standard Jetting Specifications VM29

Motorcycle	Carb Model	Main Jet	Air Jet	Pilot Jet	Jet Needle	Needle Jet	Throttle Valve
Honda CB750 thru '78	VM29-A2	#115	.9	17.5	5DL31-3	0.6	1.5
Kawasaki KZ650, 900, 1000	VM29-A7	#120	.9	25	5DL31-3	0.6	1.5
Suzuki GS 750, 1000	VM29-A12	#115	.9	25	5DL31-3	0.6	2.0

MIKUNI VM33 SMOOTHBORE CARB EXPLODED VIEW

Float Height
23mm


57
38
33
34
35
36
37
31
32
50
39
49
50
39
43
46
45
42
44
42
30
13
15
77
78
91
92
93
94
90
89
86
29
6
5
4
79
59
60
84
83
82
24
85
70
1
2
63
3
80
68
69
47
98
23
28
22
28
27
12
87
88
81
46
62
55
56
52
99
53
61
101
102
103
51
73
74
76
69
72
75
58
105
19
97
96
95
64
34
24
25
65
67
66
48
12
9
10
11
20
14
21
26
7
8
71
16
100
17
18
40
41
54
104

MIKUNI VM33 SMOOTHBORE CARB PARTS

***Please note : The following is for parts reference only. This Mikuni carb is no longer in production.**

Item No.	Order No.	Mikuni Part No. & Description
1.	N/A	VM33SS101/01b Mixing Body
2.	N/A	VM33SS101/01c Mixing Body
3.	N/A	VM33SS102/01c Mixing Body
4.	N/A	VM33SS103/01b Mixing Body
5.	002-600	VM33/31 Gasket
6.	002-601	VM33/20 Jet Block
7.	002-602	BN042/64 O-Ring
8.	002-603	VM33/77 Drain Plug
9.	002-187	B34/52 NV Washer
10.		assembly (See chart below)
11.	002-605	VM30/160 Float Pin
12.	002-606	VM18/233 Filter Screen
13.	002-083	VM20/369 E-Ring
14.	002-607	VM30/257 Gasket, Float Chamber
15.	002-340	J8-6DJ30 Jet Needle
16.	003-536	261 0-8 Needle Jet
17.	N/A	697-05001a MJ Extender
18.	Pg. 58	N100/604 Main Jet
19.	002-609	C6=0307 Screw
20.	002-501	VM26/260 Float assembly
21.	002-610	VM29.20-100 Float Chamber Body
22.	002-611	888-360003a Hose, Air Vent
23.	002-612	792-20008 Fuel Nipple
24.	N/A	VM28/268 Washer
25.	002-614	BN38/135 E-Ring
26.	002-615	CW2=0416-B Screw w/ Lock Washer
27.	N/A	792-20007 Fuel Nipple
28.	002-617	BV30/40 O-Ring
29.	003-198A	832-39003 1.5 Throttle Valve
	003-198	832-39003 2.0 Throttle Valve
30.	002-618	VM33/60 Bushing Collar
31.	002-619	VM33/71 Bracket assembly
32.	002-527	CW2=0305 Screw w/ Lock Washer
33.	002-620	VM33/32 Gasket, Top Cover
34.	002-621	N138.050 Adjuster Nut
35.	N/A	VM33/21 Adjuster Screw
36.	002-623	730-06005 Screw
37.	002-624	VM33/64 Lever assembly
38.	002-625	776-39001 Top Cover
39.	N/A	W4-04-0 Lock Washer
40.	002-627	VM33/75 Bracket Plate, Front
41.	002-628	C2-0512-B Screw
42.	002-629	B401/10 Washer (Polyester)
43.	002-630	VM33/45 Plate, Connecting
44.	002-631	VM33/49 Spring
45.	002-632	M10/56 Washer
46.	002-355	BSW28/70 E-Ring
47.	002-633	813-28001 Collar Pipe
48.	N/A	700-17003a Shaft
49.	N/A	VM33/52a Lever assembly
50.	002-636	VM33/73 Screw
51.	002-637	C5-0510 Screw
52.	002-519	VM28/230 Bolt
53.	N/A	VM33/26 Lever assembly
54.	N/A	VM33/78 Name Plate
55.	002-639	VM33/68a Collar
56.	002-640	VM28/403 Seal, Felt
57.	002-615	CW2=0416B Screw w/ Lock Washer
58.	002-641	N149.030 Hose, Air Vent
59.	002-642	N138.186 Screw
60.	002-643	VM33/67 Bracket Plate, Rear
61.	N/A	Bell Crank assembly
62.	002-645	VM33/35 Spring
63.	002-646	N148.013 Vacuum Cap
64.	002-647	VM22/349 Throttle Return
65.	002-648	C2-0508-B Screw
66.	002-649	VM33/34 Adjuster Plate
67.	N/A	VM33/23 Bracket
68.	N/A	VM33/58 Choke Shaft Plate
69.	002-652	C2-0408-B Screw
70.	002-653	VM33/63 Cap, Side
71.	Pg. 59	VM22/210 Pilot Jet
72.	002-654	N138.049a Adjuster Screw
73.	002-655	N110.209 Spring
74.	002-656	N141.217 Washer
75.	N/A	VM33/43 Main Bracket
76.	N/A	603-25001a Adjuster Screw
77.	002-659	N158.052 Screw
78.	002-660	VM26/435 Lever
79.	002-661	VM33/70 Cap Side
80.	002-662	VM33/72 Fuel Cap
81.	N/A	VM24/532 Ring
82.	002-664	VM28/449 Washer
83.	002-665	VM28/293 Spring
84.	N/A	VM28/269 Screw
85.	N/A	VM33/56a Choke Shaft assembly
86.	002-668	C2-0306-B Screw
87.	N/A	VM33/59 Side Plate
88.	002-670	VM34/510 Starter Plunger
89.	002-671	VM16/42a Plunger Spring
90.	002-672	VM18/249 O-Ring
91.	N/A	KP/13 E-Ring
92.	N/A	VM28/450 Ring
93.	002-084	VM20/455 Rubber Cap
94.	N/A	VM38/359 Guide Holder
95.	002-181	M12F/46a Spring
96.	002-676	VM14/75 O-Ring
97.	002-677	VM26/287 Air Screw
98.	N/A	OS/05b O-Ring
99.	N/A	W4-05 Lock Washer
100.	002-680	BV23/196 Washer
101.	N/A	VM33/681 VM33/61 Bearing
102.	002-682	VM33/37 Seal, Felt
103.	002-683	946-17001 Washer
105.	N/A	BS30/97 Air Jet
106.	002-684	VM33/82 Restrictor

Needle Valve Assembly

002-503	2.5	N122.032	002-504	2.8	N122.504

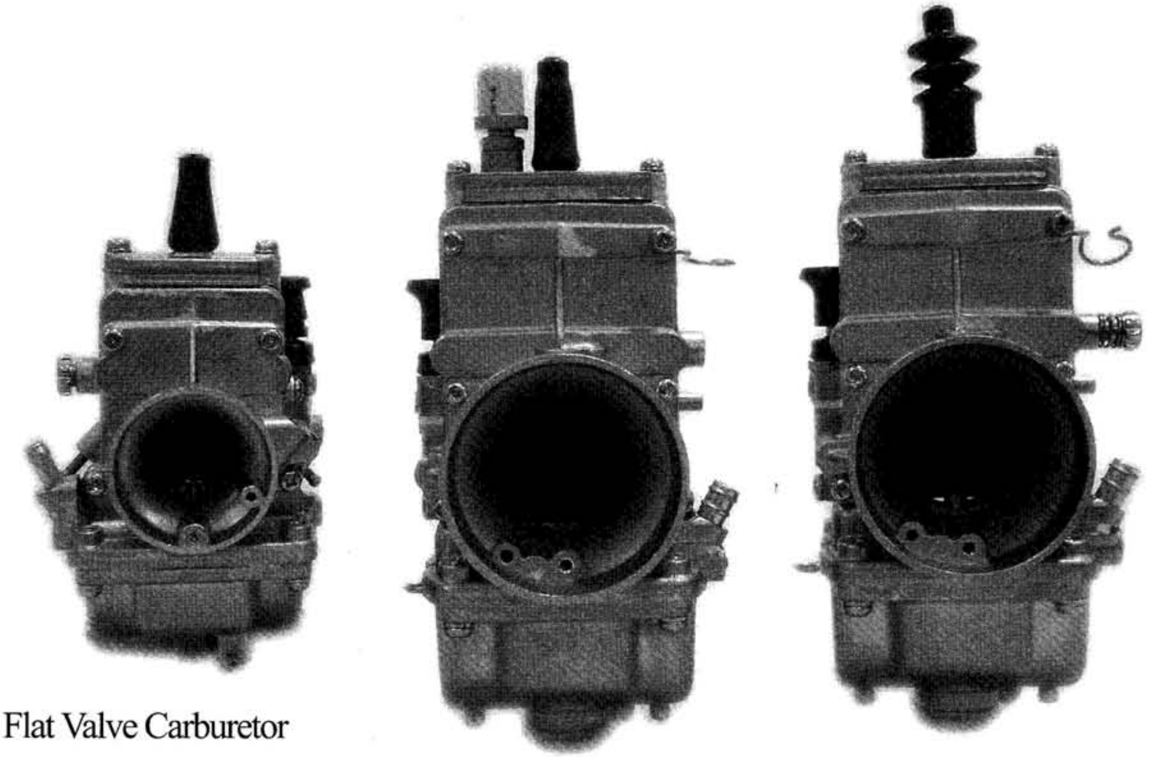
Throttle Valves

CUTAWAY	PART#	CUTAWAY	PART#	CUTAWAY	PART#
1.5	003-198A	2.0	003-198	2.5	003-198B

Standard Jetting Specifications VM33

Motorcycle	Carb Model	Main Jet / Air Jet	Pilot Jet	Jet Needle	Needle Jet	Throttle Valve	Air Screw
Honda CB900 / 1100	VM33-A4	#125 / .7	#30	6DJ30-2	#261 0.8	1.5	1.0 Out
Kawasaki KZ1000 / 1100	VM33-A14	#127.5 /1.2	#17.5	6DJ30-4	#261 0.6	1.5	3/4 Out
Suzuki GS1000 / 1100	VM33-A14	#132.5 / .6	#17.5	6DJ30-4	#261 0.6	2.0	3/4 Out
Yamaha XS1100	VM33-A19 / D45	#132.5 / .9	#17.5	6DJ30-4	#261 0.6	2.0	3/4 Out
Kawasaki ZX900, 1000 (Ninja)	VM33-A19 / D40	#125 / .9	#20	6DJ30-4	#261 P.0	2.0	3/4 Out

MIKUNI TM FLATSLIDE CARBS



TM Series Flat Valve Carburetor

Mikuni's original flat valve (flat slide) carburetor, the TM Series Carburetors provide significant performance improvements over older design round slide carburetors. Air flows faster and smoother through the TM Series venturi due to the flat slide configuration and the jet blocks which help create a smoothbore effect. The high velocity of the air flow means a stronger vacuum at the needle jet, providing more precise metering and better throttle response.

Order No.	Carburetor Description	Main Jet	Pilot Jet	Needle Jet	Jet Needle	Throttle Valve	Air Jet
001-017	TM24-8001	4/042 130	VM22/210 15	454 Q-0	5N13	832-30006 3.0	Fixed
001-023	VM28-418	4/042 180	VM22/210 15	175 P-8	5DP39	832-33001 2.5	1.8
001-026	TM32-1	4/042 250	VM22/210 45	389 Q-2	5FP17	832-39012 4.0	None
001-033	TM34-2	4/042 280	VM22/210 50	389 Q-2	5FP17	832-39012 4.0	None
001-038	TM36-2	4/042 280	VM22/210 50	389 Q-6	6FJ40	832-43002a 4.0	None
001-060	TM38-85/47mm*	4/042 230	VM22/210 22.5	389 Q-2	6FJ41	832-43011 4.0	None
001-061	TM38-86/44mm*	4/042 230	VM22/210 22.5	389 Q-2	6FJ41	832-43011 4.0	None
001-032	TM33-8012**	N100.604 127.5	VM28/486 37.5	640 P-8	5FP96	1.5	0.7
001-552	TM36-68**	N100.604 130	VM28/486 12.5	568 P-8	9DZH6-50	TM36/137 2.0	1.0
001-085	TM40-6**(HS40)	N100.604 165	VM28/486 17.5	568 Y-6	9DJY04-96		1.1

***Spigot O.D.** ****w/Accelerator Pump**

MIKUNI
GENUINE COMPONENTS

Power Jet Kits

The TM Series bodies are designed to accept Power Jet Kits. Power Jet Kits are usually used on carburetors in 2 stroke engine applications to prevent leaning out during extended full-throttle running.

002-041	**Power Jet Kit 36-44mm**

Special Set TM Series Flat-Valve Carbs

Use the following part numbers when ordering a special jetting or request.

Carb	Jetting Change	T/V Change
TM24	**001-170**	
TM28	**001-172**	**001-173**
TM32	**001-176**	
TM33	**001-187**	
TM34	**001-178**	
TM36	**001-180**	**001-181**
TM36-68	**001-185**	
TM38 44mm*	**001-152**	**001-153**
TM38 47mm*	**001-154**	**001-155**

***Spigot O.D.**

see pg. 74 for TM carb kits

MIKUNI TM FLATSLIDE CARBS

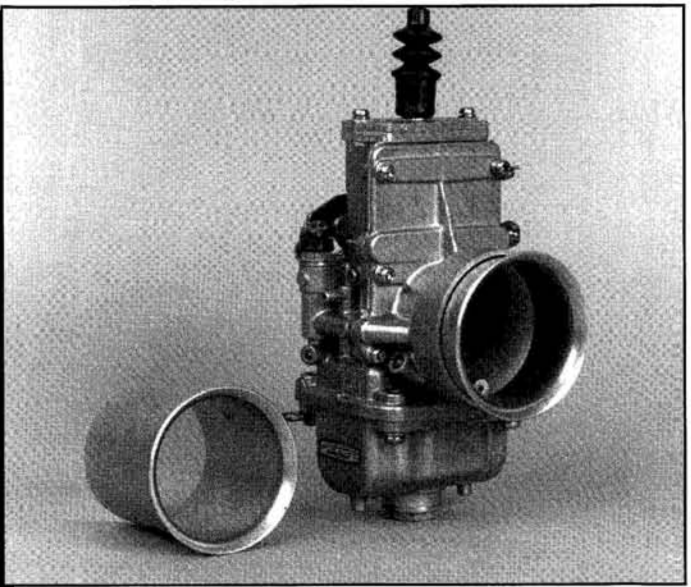
Sudco Pro-Series Carburetors

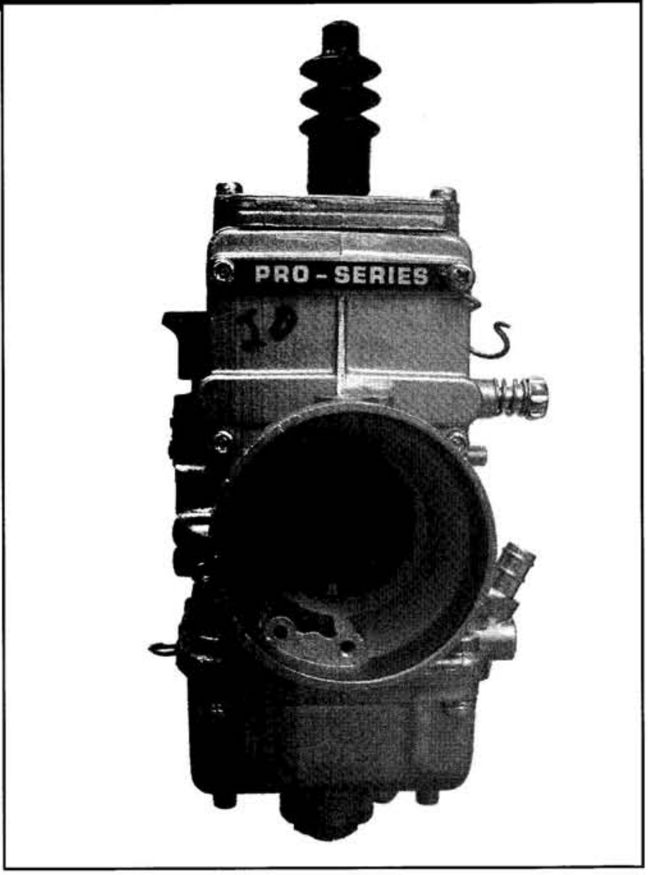
The Pro-Series Carburetor features proven performance gains with a hand machined venturi area. Our tests show that this carburetor's design will outflow many other factory produced carburetor by a minimum of 10% or more. This venturi design also provides a higher air speed rate at lower RPM's which results in a much stronger, smoother, wider powerband. Pro-Series Carburetors are available in Special-Set, single or kit form in sizes 39 and 41mm. Comes jetted to customer's application or request

PART No.	SIZE	SPIGOT O.D
001-194	39mm	43mm
001-196	*41mm	47mm

*H-2 Large inlet

(For replacement parts use TM Flat-Valve parts list)





Sudco Velocity Stacks for Mikuni TM and Pro-Series Carbs

New from Sudco International are these spun aluminum Hi-Flow Velocity Stacks to fit their modified Mikuni TM36, 37, 38 and 39, 41 Pro-Series Carburetors. Designed for racing applications such as snowmobiling, dirt bikes, ATV's and roadracing, the Sudco Pro-Series TM Carbs can use the Velocity Stacks with or without air filters because of the Velocity Stacks press-fit inside the carb's mouth. The Sudco Velocity Stacks are available in 15mm and 50mm lengths for precise tuning.

005-255	15mm Mini
005-257	50mm Dirt Track Use

Throttle Valves

007-401	832-43011 2.5	**TM38-85, TM38-86 (New Style Carb)**
007-406	832-43011 3.0	**Side Idle**
007-403	832-43011 3.5	
007-404	832-43011 4.0	
007-405	832-43011 4.5	
002-734	832-43002 2.5	**TM36, TM38 (Old Style Carb, Top Idle)**
002-735	3.0	**Top Idle**
002-737	4.0	
002-739	5.0	
002-804	832-33001 2.0	**TM28**
002-951	832-30006 3.0	**TM24**
002-800	832-39012 4.0	**TM32, TM34**

Needle Valves

002-703	786-46001 1.5	**TM32, TM34, TM36,TM38**
002-702	1.8	
002-704	2.0	
002-705	3.3	
002-706	3.0	**TM32-TM38**
002-707	3.5	
002-840	VM24/557 2.5	**TM28,TM24**
002-232	VM26/185 1.5 **(viton tip)**	**TM24 Only**

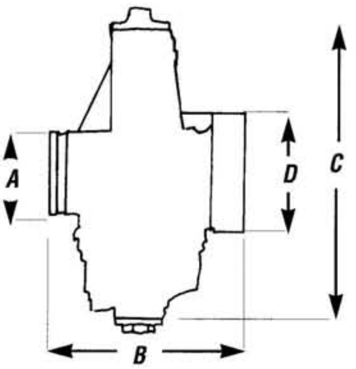
Jet Needles

002-349	6FM46	**TM36,TM38**
002-712	6FJ40	**39 Pro-Series, 41 Pro-Series**
002-341	6DP4	
002-713	6FJ41	
002-273	5DP39	**TM28, TM32, TM34**
002-300	6DH3	
002-299	6DH2	
002-315	6F9	

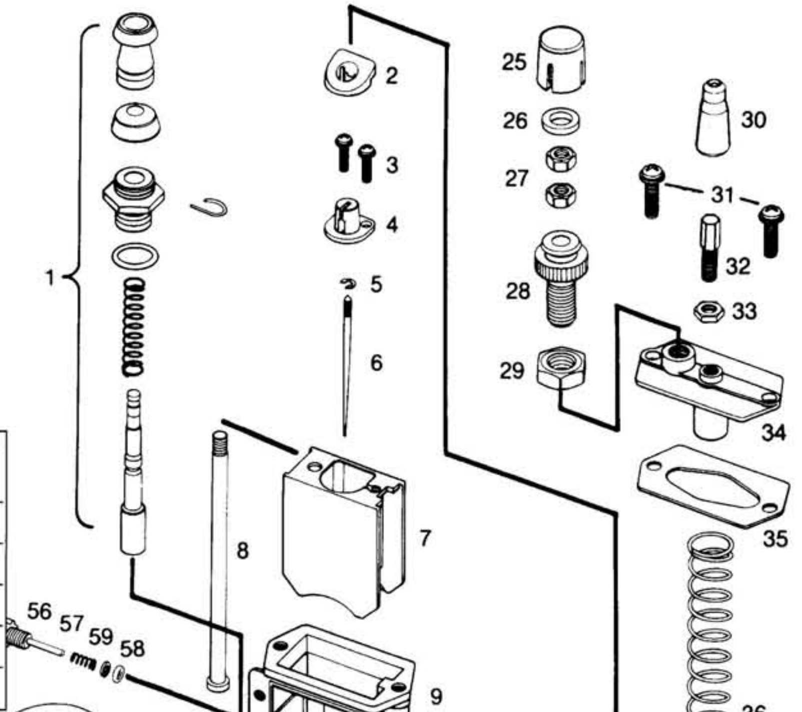
See complete Jet Needle selection for additional sizes(pg. 70)

MIKUNI TM FLATSLIDE CARB EXPLODED VIEW

TM Series Flat Slide Carburetor Dimensions



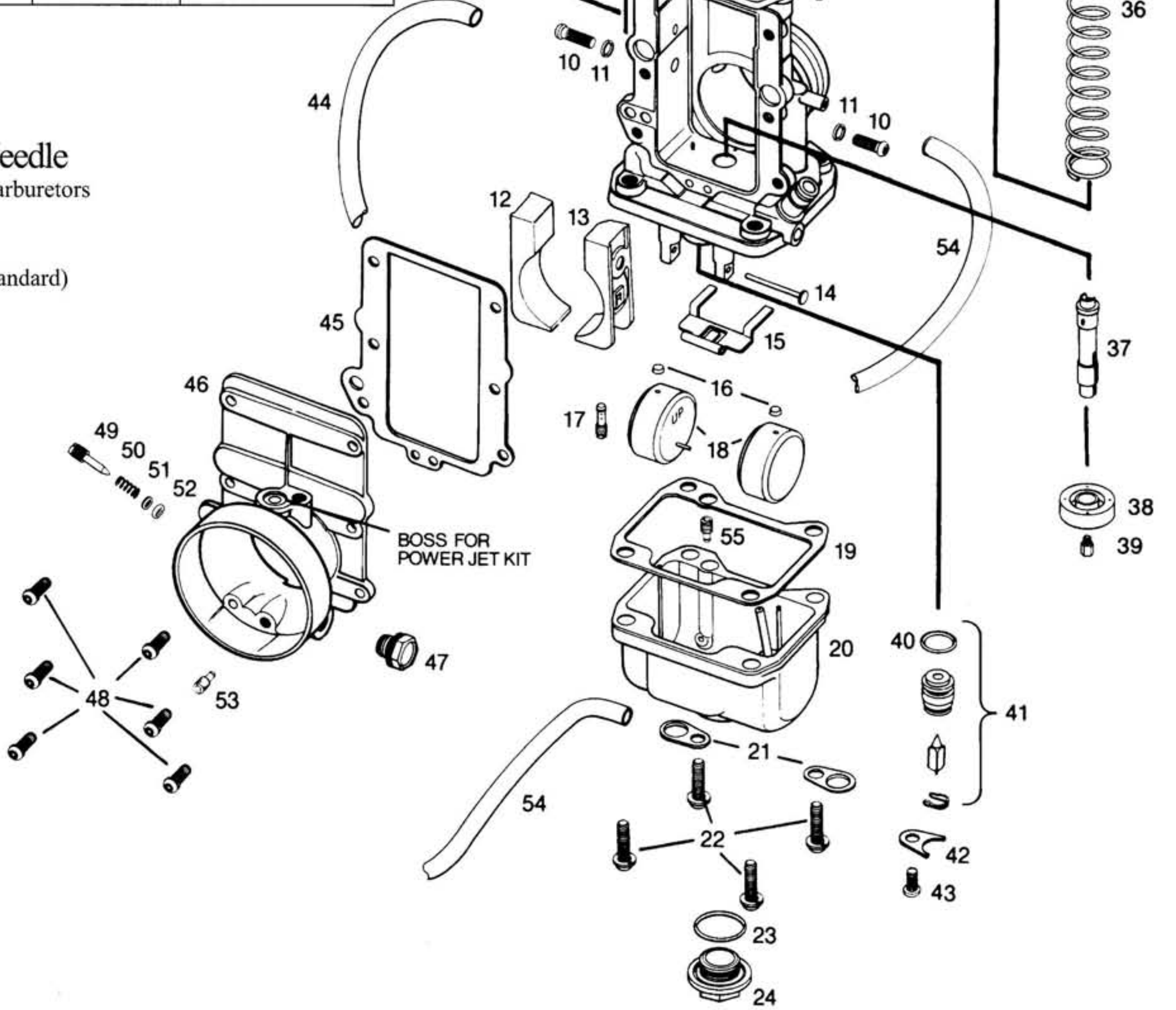
Model Dimension	VM28 -418	TM32 -1	TM34 -2	TM36 -2	TM38 86	TM38 85
A	33	40		43		47
B	82	83		100		
C	135	160		170		
D	44	58		62		
Total Width	76	78		75		


1
2
3
4
5
6
7
8
9
25
26
27
28
29
30
31
32
33
34
35
36
56
57
59
58

Special Jet Needle

for 38 Flatslide Carburetors

RICH 6DP4
6FJ40 (Standard)
6FM46
LEAN 6FJ41


10
11
44
11
10
12
13
54
14
15
37
45
16
17
18
46
49
50
51
52
55
19
BOSS FOR
POWER JET KIT
38
39
20
40
47
41
48
53
21
54
22
42
43
23
24

MIKUNI TM FLATSLIDE CARB PARTS

1. **COMPLETE STARTER SYSTEM**
   - **002-815** VM28/116 **TM28 Lever Type**
   - **002-816** VM29/47 **TM32,34, 36, 38**
2. **NYLON RING**
   - **002-754** VM28/1046 **TM32, 34**
   - **002-753** VM38/153 **TM36, 38**
   - **002-780** VM24/791A **TM24**
3. **SCREWS**
   - **007-265** CW2=2608 **TM24**
   - **002-752** CW2=0310 **TM32-38**
4. **CABLE CONNECTOR**
   - **002-751** VM38/152 **TM36, 38**
   - **002-759** VM28/1042 **TM32, 34**
   - **002-758** VM24/790 **TM24**
5. **NEEDLE POSITIONING CLIP**
   - **002-083** VM20/369 **All TM Series**
6. **JET NEEDLE (see chart pg. 70)**
7. **THROTTLE VALVE (see chart pg. 31)**
8. **IDLE ROD**
   - **002-732** VM38/159 **TM36, 38**
   - **(not applicable for TM28 through TM34)**
9. **MIXING CHAMBER TOP (Not Available)**
10. **SCREW, Jet Block**
    - **002-742** VM38/132 **All TM Series**
11. **WASHER**
    - **002-741** VM34/274 **All TM Series**
12. **JET BLOCK LEFT**
    - **002-710** VM38/144 **TM38 (Left)** (VM38/121)
13. **JET BLOCK RIGHT**
    - **002-711** VM38/145 **TM38 (Right)** (VM38/122)
14. **FLOAT PIN**
    - **002-605** VM30/160 **ALL TM Series**
15. **FLOAT ARM**
    - **002-112** VM36/15 **TM32, 34, 36, 38** **(TM28 not applicable)**
16. **CAP, Float Guide Pin**
    - **002-718** VM26/42 **All Tm Series**
17. **PILOT JET (see chart pg. 59)**
18. **FLOAT**
    - **002-113** VM24/236 **TM32, 34, 36, 38**
    - **007-255** VM24/365 **TM24**
    - **002-481** 859-52020 Rt **TM38***
    - **002-482** 859-52021 Lt **TM38***
19. **GASKET, float chamber**
    - **002-700** VM34/374 **TM32, 34, 36 38**
    - **007-250** VM20/492 **TM24**
20. **FLOAT CHAMBER BODY ASSEMBLY**
    - **002-820** TM32/02-60 **TM32**
    - **002-821** TM32/02-80 **TM34**
    - **002-701** TM32/02-100 **TM36, 38** (VM38/121)
    - **002-822** TM38/138 **TM38***
21. **PLATE, Hose Retaining (not available)**
22. **SCREW**
    - **002-823** CW2=0416 **TM28**
    - **002-373** CW2=0516 **TM32, 34, 36, 38**
    - **002-615** CW2=-416-B **TM24**
23. **O-RING**
    - **002-825** VM26/227 **TM28**
    - **002-531** VM28/254 **TM32, 34, 36, 38**
24. **DRAIN PLUG**
    - **002-827** VM28/817 **TM28**
    - **002-526** VM28/253 **TM32, 34, 36, 38**
25. **CAP, Idle Adjuster**
    - **002-731** VM35/40 **TM36, 38**
    - **(not applicable for TM28 through TM34)**
26. **PACKING**
    - **002-730** N138.077 **TM36, 38**
27. **NUT**
    - **002-729** N2=04 **TM36, 38**
    - **(not applicable for TM28 through TM34)**
28. **IDLE ADJUSTER**
    - **002-728** 603-68001 **TM36, 38**
    - **(not applicable for TM28 through TM34)**
29. **NUT**
    - **002-727** BDC36/35 **TM36, 38**
    - **(not applicable for TM28 through TM34)**
30. **RUBBER CAP**
    - **002-061** VM26/46 **TM28**
    - **002-723** VM18/228 **TM32 through TM38**
31. **SCREW w/LOCKWASHER**
    - **002-748** CW2=0412 **All TM Series**
32. **CABLE ADJUSTER**
    - **002-724** VM36/83 **TM32, 34, 36, 38**
33. **LOCKNUT**
    - **002-065** B30/247 **All TM Series**
34. **MIXING CHAMBER TOP**
    - **002-733** 776-19002 **TM36, 38**
    - **(not applicable to TM28 through TM34)**
    - **007-232** 776-19001 **TM38***
35. **GASKET , Top**
    - **007-260** VM24/785 **TM24**
    - **002-830** VM28/1045 **TM28**
    - **007-268** VM32/405 **TM32-34**
    - **002-725** VM38/127 **TM36, 38**
    - **(not applicable for TM32 and TM34)**
36. **SPRING, Throttle Valve**
    - **002-831** 730-11003 **TM24**
    - **002-832** 730-15001 **TM28**
    - **002-750** 730-16003 **TM36, 38**
37. **NEEDLE JET (see chart pg.60-61)**
    - **#175 Series** **TM28**
    - **#454 Q-0** **TM24**
    - **#389 Series** **TM32, 34, 36, 38**
38. **RING, main jet**
    - **002-664** VM28/449 **TM24**
    - **002-836** VM28/429 **TM28**
    - **002-837** VM34/454 **TM32, 34, 36, 38**
    - **002-835** TM34/36 **TM38***

39, MAIN JET, 4/042 (see chart pg. 58)

40. **O-RING**
    - **002-838** VM24/559 **TM28**
    - **002-709** KV/10 **TM32, 34, 36, 38**
41. **NEEDLE VALVES**
    - **002-842** VM24/557A 1.5 **TM24**
    - **002-841** VM24/557A 2.0
    - **002-840** VM24/557A 2.5
    - **002-840** VM24/557 2.5 **TM28**
    - **002-703** 786-46011 1.5 **TM32, 34, 36, 38**
    - **002-702** 786-46011 1.8
    - **002-704** 786-46011 2.0
    - **002-705** 786-46011 3.3
    - **002-707** 786-46011 3.5
    - **002-706** 786-46011 3.0
42. **PLATE, needle valve**
    - **002-721** VM24/560 **All TM Series**
43. **SCREW**
    - **002-845** C2-0408 **TM28**
    - **002-722** C2=0406 **TM32, 34, 36, 38**
44. **VENT HOSE**
45. **GASKET, Front Cover**
    - **002-847** VM28/1044 **TM28**
46. **FRONT BODY, Air Intake (not available)**
47. **BOLT**
    - **002-756** BV15/27 **TM38**
    - **(not applicable for TM28 through TM36)**
48. **SCREW**
    - **002-748** CW2=-412 **All TM Series**
49. **AIR SCREW, Pilot**
    - **002-850** VM20/584 **TM24, 28**
    - **002-720** VM24/662 **TM32, 34, 36, 38** (VM20/305)
50. **SPRING, Pilot Air Screw**
    - **002-181** M12F/46a **All TM Series**
51. **WASHER, Pilot Air Screw**
    - **002-856** VM12/33 **TM32, 34, 36, 38**
    - **(not applicable for T M28)**
52. **O-RING, Pilot Air Screw**
    - **002-858** N133.037 **All TM Series**
    - **(not applicable for TM28)**
53. **AIR JET BS30/97 (see chart pg. 59)**
54. **OVERFLOW HOSE**
55. **STARTER JET**
    - **004-400** VM17/1002 #15 **TM28**
    - **004-402** #20
    - **004-406** #40
    - **004-410** #60 **TM32**
    - **004-414** #80 **TM34, 36**
    - **004-418** #100
56. **IDLE STOP SCREW**
    - **002-860** 603-27002 **TM24, 28**
    - **002-861** 603-16003 **TM32,34,38***
57. **SPRING, Idle Screw**
    - **002-863** VM15/112 **TM24, 28**
    - **002-864** VM24/556 **TM32, 34**
58. **O-RING**
    - **002-676** VM14/75 **TM28, 24**
    - **002-212** BV32/04 **TM32, 34, 38***
59. **WASHER**
    - **002-866** VM14/87 **TM28**
    - **(not applicable for TM32, 34, 36, 38)**

MIKUNI-TMX FLATSLIDE CARBS

Mikuni TMS38 Carburetor for Motocross Bikes

An evolution of the popular Mikuni TMX model, the Mikuni TMS38 Carburetor offers vastly improved mid-range and top-end performance with precise jetability. Design changes include a TMS flatslide throttle with no cutaway. Instead the slide has a specially designed internal chamber with two metering orifices. There is no screw-in pilot jet, and the pilot fuel is now metered by the jet needle. Tuning is quicker and more simplified with less components.

The installation of an optional special jet needle (the Pro Option Needle Kit shown below) in the TMS allows the main jet to be removed for even further performance.This special jet needle meters more fuel near the top of the needle jet where a substantial quality of fuel is available. This allows the air/fuel mixture to be more consistent, resulting in a even more noticeable performance increase.

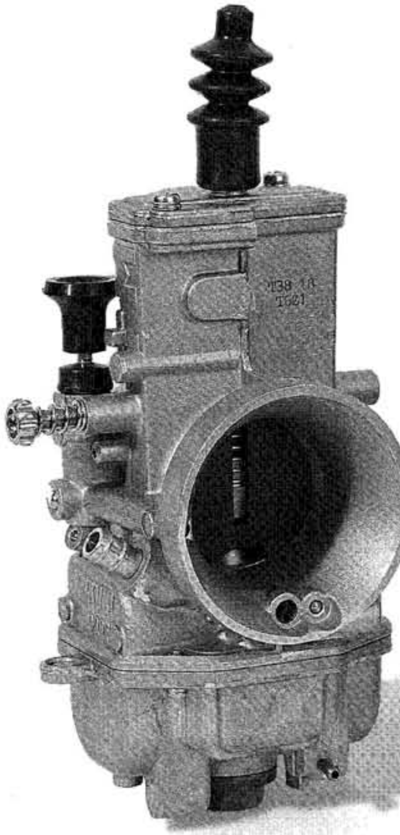
Available as a complete kit, the 38mm Mikuni TMS Carburetor is intended for use in off-road racing applications on 125cc, 250cc and two-stroke engines. Kit includes carb, throttle cable, airboot adapter, main jets, jet needles, hose, clamps, pocket tuner and instructions.

TMS Carburetor is intended for use in off-road racing applications on 125cc, 250cc and two-stroke engines. Kit includes carb, throttle cable, airboot adapter, main jets, jet needles, hose, clamps, pocket tuner and instructions.

Pro Option TMS38 Needles

Take your TMS38 one step further. The TMS38 eliminated the pilot jet system. By using special needles we can now eliminate the main jet. All tuning is accomplished with a special needle and the air screw. Final fuel metering has now become very precise at the needle jet outlet, providing quicker throttle response and more exact air fuel mixtures. **(see pg. 38)**

MIKUNI
GENUINE COMPONENTS
MIKUNI TMS CARBU
PRO-OPTION NEEDL
INTRODUCTION
TMS-JN250/SA
250 TMS Pro option Needle Kit



TMX Series Carburetors Mikuni designed the TMX Series particularly for 2-stroke engines in motocross, off-road bike and ATV racing applications. The TMX features a radial flat slide design, lightweight and compact body. Suggested applications are TMX35 for 125cc race engines and TMX38 for all Open Class machines.

Order No.	Mikuni No.	Main Jet	Pilot Jet	Jet Needle	Throttle Valve
001-034	TMX35-1	4/042 350	VM22/210 20	6EN11-53	999-832-014 6.0
001-182	TMX35-1	Special Set	Specify make/model or required jetting specifications.		
001-076	TMX38-18 (47mm O.D.)	4/042 370	VM22/210 20	6EJ12-55	999-832-014 3.5
001-189	TMX38 (47mm O.D)	Special Set	Specify O.D., make/model or required jetting specifications.		
001-077	TMX38-27 (44MM O.D.)	4/041 370	VM22/210 20	6EJ12-55	999-832-014 3.5
001-184	TMX38 (44mm O.D)	Special Set	Specify O.D., make/model or required jetting specifications.		

Throttle Valves		*Cutaway*
002-472	999-832-014	3.0
002-473		3.5
002-476		4.0
002-474		5.0
002-475		6.0

Needle Valves		
002-466 (Standard)	786-36004	3.5 gravity flow
002-464 (Option)	786-36004A	1.8 fuel pump

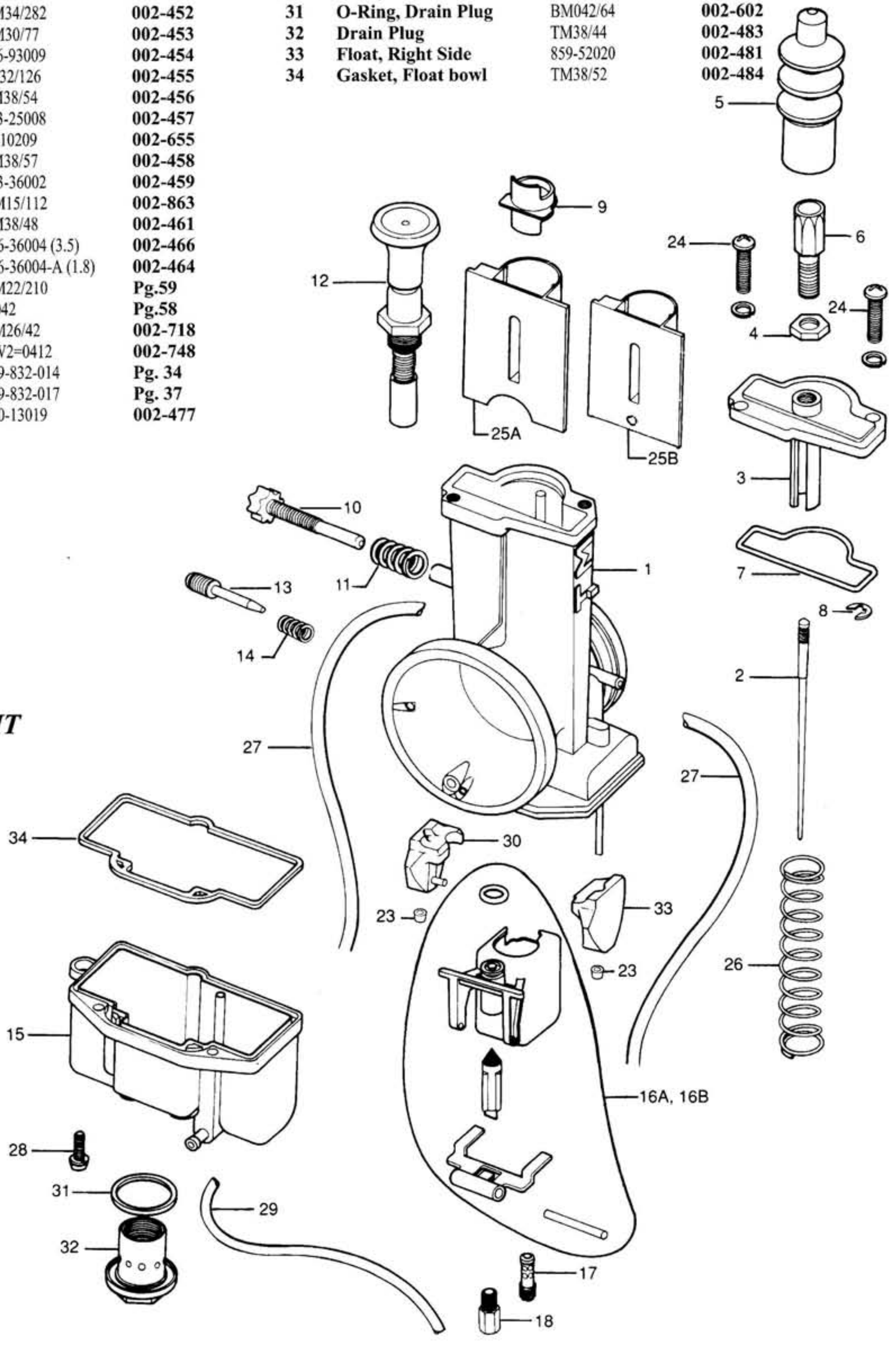
MIKUNI TMX/TMS FLATSLIDE CARB PARTS

TMX/TMS Series Carburetors TMX35 & 38, TMS38

No.	Description	Mikuni No.	Order
1	**Mixing Body Carb**	N/A	
2	**Jet Needle**	J8	**Pg.38**
3	**Cover, Carb Top**	776-19014	**002-451**
4	**Lock Nut, Adjuster**	B30/247	**002-065**
5	**Cap, Rubber**	VM34/282	**002-452**
6	**Adjustable Cable**	VM30/77	**002-453**
7	**O-Ring, Top Cover**	616-93009	**002-454**
8	**E-Ring, Needle Clip**	BS32/126	**002-455**
9	**Ring, Retaining**	TM38/54	**002-456**
10	**Adjuster, Idle Stop**	603-25008	**002-457**
11	**Spring, Idle Adjust**	N110209	**002-655**
12	**Plunger, Starter Ass'y**	TM38/57	**002-458**
13	**Screw, Air Adjuster**	603-36002	**002-459**
14	**Spring, Air Screw**	VM15/112	**002-863**
15	**Chamber, Float Bowl**	TM38/48	**002-461**
16A	**Valve Seat, Needle Ass'y**	786-36004 (3.5)	**002-466**
16B	**Valve Seat, Needle Ass'y**	786-36004-A (1.8)	**002-464**
17	**Pilot Jet**	VM22/210	**Pg.59**
18	**Main Jet**	4/042	**Pg.58**
23	**Cap, Float Retainer**	VM26/42	**002-718**
24	**Screw, Top Cover**	CW2=0412	**002-748**
25A	**Throttle Valve TMX**	999-832-014	**Pg. 34**
25B	**Throttle Valve TMS**	999-832-017	**Pg. 37**
26	**Spring T.V.**	730-13019	**002-477**
27	**Hose, Vent**	888-24011	**002-478**
28	**Screw, Float Bowl**	CW2=0308	**002-479**
29	**Hose Overflow**	888-23022	**002-480**
30	**Float, Left Side**	859-52021	**002-482**
31	**O-Ring, Drain Plug**	BM042/64	**002-602**
32	**Drain Plug**	TM38/44	**002-483**
33	**Float, Right Side**	859-52020	**002-481**
34	**Gasket, Float bowl**	TM38/52	**002-484**

FLOAT HEIGHT

20MM

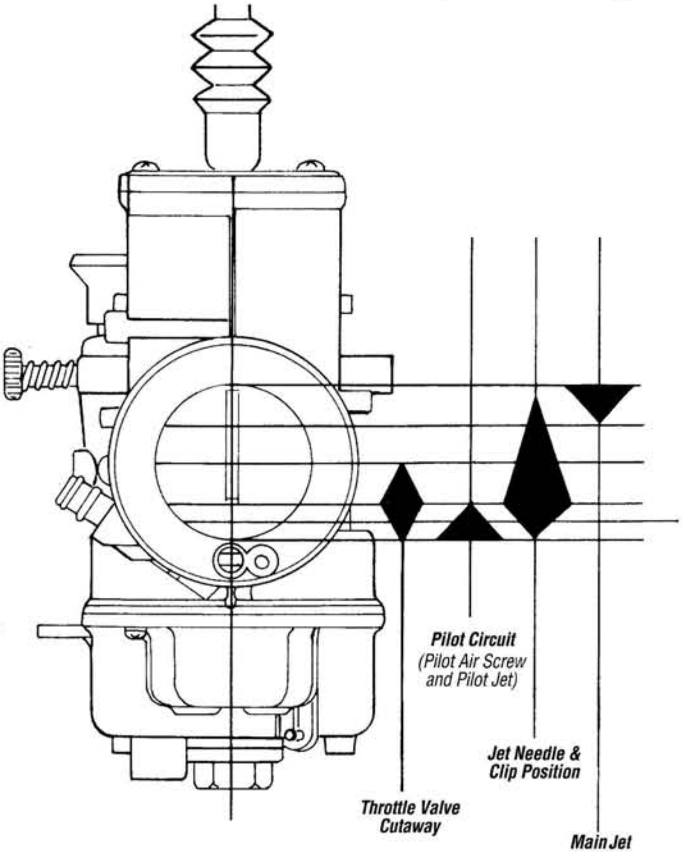


MIKUNI TMX/TMS TUNING COMPONENTS

Note: All tuning of the carburetor should be done with the engine at normal operating temperature

Throttle Slide Position

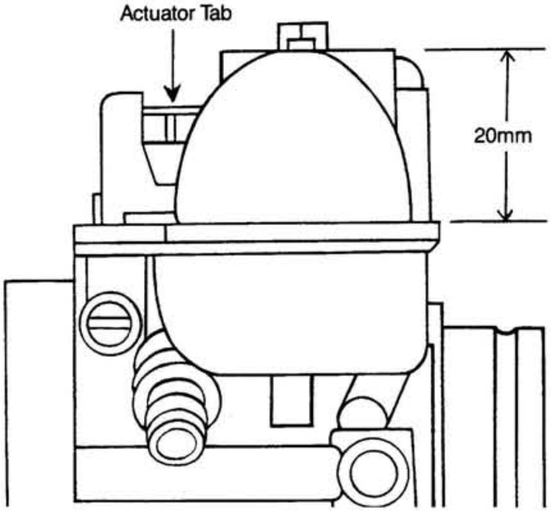
The TMS / TMX Carburetor's tuning components function range.



Float Level Adjustment for TMS / TMX

Invert carburetor and remove float bowl.

The Float Assembly's actuator tab should just begin contact with the Needle Valve Assembly when the bottom of the Float Assembly is 20mm from carburetor bottom as shown. Make required adjustments by bending actuator tab.



Fuel Metering Circuits (TMS Only)

Pilot System The Pilot system is comprised of two adjustable components.

Pilot Air Screw When turned in, richens the fuel mixture by reducing the amount of air being introduced to the pilot circuit. The effective adjustment range is from 1/2 to 2 full turns out. The Pilot Air Screw should be adjusted to provide the highest engine rpm while the engine is at idle.

Pilot Fuel Is provided by the Jet Needle diameter. This can be adjusted by replacing the Jet Needle with one of a different diameter. Example: 57 equals 2.57mm, 58 equals 2.58mm etc. The larger the diameter, the leaner the mixture. Smaller diameter is richer.

Tuning Note The optimum carb performance is obtained when the needle diameter is such that the best Pilot Air Screw setting is 1.0 turn out.

Throttle Valve Does not use a conventional cutaway, but rather a specially designed internal chamber with two venting holes. The hole sizes are pre-set and need no adjustments.

Jet Needle The tapered rod that locates in the Throttle Valve with an "E-Clip." The taper of the needle meters the fuel from 1/4 to 3/4 throttle. Changing the position of the E-Clip from the standard 3 position will lean or richen midrange throttle operation.

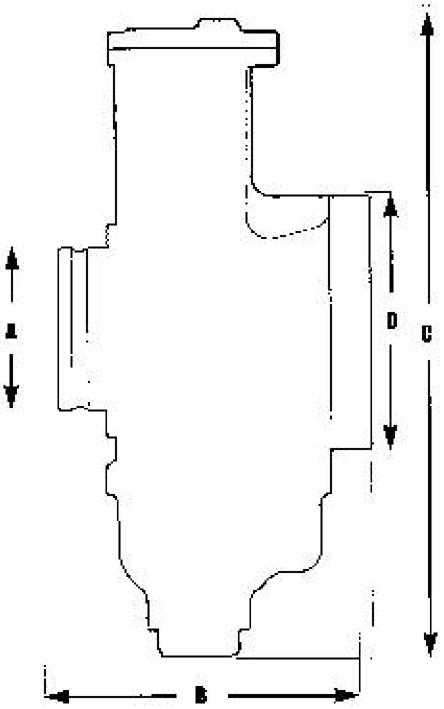
Main Jet The Main Jet is located in the float bowl and can be removed or changed through the float bowl drain plug hole. The Main Jet controls the air/fuel mixture ration from 3/4ths to wide open throttle position. The larger the number stamped on the Main Jet, the richer the mixture.

When tuning the TMS Carburetor the tuning components being used are relative to the throttle slide position, not engine RPM or actual vehicle speed. Most tuning can be accomplished at relatively low speeds by making note of the approximate throttle position at which there appears to be a tuning problem. Make tuning adjustments by adjusting or changing the tuning component controlling the fuel mixture at that throttle position.

TMX/TMS CARB REBUILD KITS

WITH 3.5 N/V ASSY	007-950
WITH 1.8 N/V ASSY	007-951

TMX/TMS Series Carburetor Dimensions (mm)



MODEL / DIMENSION	TMX35-1	TMX38-27 TMS38-77	TMX38-18 TMS38-78
A	46	44	47
B		78	
C		164	
D		62	
TOTAL WIDTH		76	

Important Tuning Characteristics

Jet Needle

The Jet Needle is the tapered rod that is positioned in the throttle valve by the 'E'-Clip. The taper of the needle increases the clearance between the Jet Needle and the fixed Needle Jet outlet as the throttle is opened. As the air flow volume increases past the throttle slide, the fuel volume is also increased to maintain the correct air/fuel ratio.

Needle "E"-Clip Position

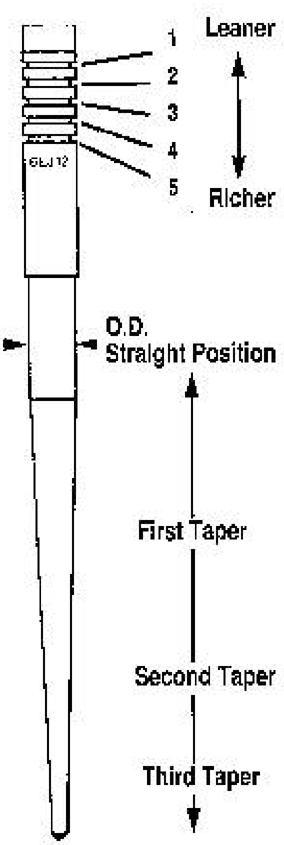
The position of the 'E'-Clip in the Jet Needle is used to correct or change the air/fuel ratio between 1/4th and 3/4th throttle valve position. The 'E'-Clip can be raised or lowered on the Jet Needle. To richen the fuel mixture the 'E'-Clip is lowered on the Jet Needle, raising the Jet Needle. To lean the fuel mixture the 'E'-Clip is raised on the Jet Needle.

Jet Needles

To correct the fuel mixture at 1/8th to 1/4th throttle slide position it may be necessary to change the Jet Needle. The Jet Needle will have a series of numbers stamped on it.

Example: 6EJ12-55. The numbers 55 indicate that the outside diameter (O.D.) of the Jet Needle is 2.55mm. A smaller O.D. number gives a richer mixture. A larger O.D. number gives a leaner mixture.

'E'-Clip Position


1
2
3
4
5
Leaner
Richer
6EJ12
O.D.
Straight Position
First Taper
Second Taper
Third Taper

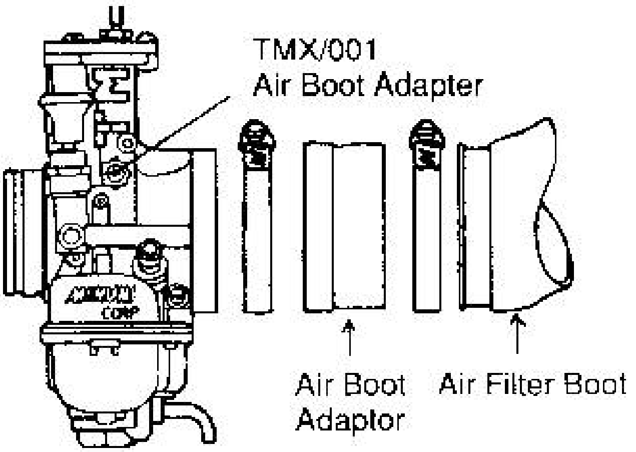
TMS Throttle Valves

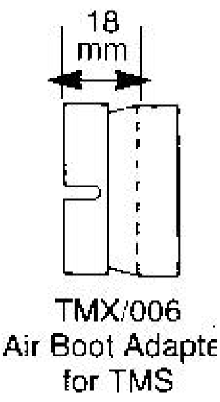
Engine	Description	Inlet Hole	Outlet Hole	Order No.
250cc	999-832-017 "1G"	2.0mm	1.4mm	007-410
125cc	999-832-017 "1H"	3.0mm	2.0mm	007-411

TMX Carb-Air Boot Adapter-TMX/001

An option available for TMX Carburetors, is this Air Boot Adapter, required for some applications when replacing a stock OEM carb with the TMX Carburetor.

005-080 TMS Carb Airboot Adapter-TMX/006.


TMX/001
Air Boot Adapter
MIKUNI CORP
Air Boot Adaptor
Air Filter Boot


18 mm
TMX/006
Air Boot Adapte
for TMS

MIKUNI TMX/TMS CARB JET NEEDLES

Jet Needle No.	Needle Diameter	Order No.	Air Fuel Ratio
TMX35 Flatside			
6EN11-58	2.58	007-056	LEANER
6EN11-57	2.57	007-055	↑
6EN11-56	2.56	007-054	
6EN11-55	2.55	007-053	
6EN11-54	2.54	007-052	
6EN11-53	2.53	007-051	↓
6EN11-52	2.52	007-050	RICHER
TMX38 Flatside			
6EJ12-60	2.60	007-077	LEANER
6EJ12-59	2.59	007-076	↑
6EJ12-58	2.58	007-075	
6EJ12-57	2.57	007-074	
6EJ12-56	2.56	007-073	
6EJ12-55	2.55	007-072	
6EJ12-54	2.54	007-071	↓
6EJ12-53	2.53	007-070	RICHER
TMS38-77, 78 125cc			
6GDY12-59	2.59	007-088	LEANER
6GDY12-58	2.58	007-087	↑
6GDY12-57	2.57	007-086	↓
6GDY12-56	2.56	007-085	RICHER
TMS38-77, 78 250cc			
6DGY04-60	2.60	007-048	LEANER
6DGY04-59	2.59	007-047	↑
6DGY04-58	2.58	007-046	
6DGY04-57	2.57	007-045	
6DGY04-56	2.56	007-044	
6DGY04-55	2.55	007-043	↓
6DGY04-54	2.54	007-042	RICHER

Pro Option Needles - TMS38

FOR 125 AND 250 CC ENGINES WITHOUT MAIN JETS THRU 1992
Each kit contains a selection of 5 different needles.

Needle Part Numbers

	(400)	(390)	(380)	(370)	(360)	
125 cc = J8-6EL 11-15	11 or	12,	13,	14,	15	(400-360)
	(380)	(370)	(360)	(350)	(340)	
250 cc = J8-6 CEM01-05	01 or	02,	03,	04,	05	(380-340)
	(360)	(370)	(360)	(350)	(340)	

Kit No.	Needle Diameter	Air/Fuel	Main Jet Equivalent	Order No.
125 CC		RICHER		
TMS-JN125/56	2.56 mm	↑	400, 390, 380, 370, 360	**007-091**
TMS-JN125/57	2.57 mm	↓	400, 390, 380, 370, 360	**007-092**
TMS-JN125/58	2.58 mm	LEANER	400, 390, 380, 370, 360	**007-093**
250 CC				
TMS-JN250/57	2.57 mm	RICHER	380, 370, 360, 350, 340	**007-095**
TMS-JN250/58	2.58 mm	↑	380, 370, 360, 350, 340	**007-096**
TMS-JN250/59	2.59 mm	↓	380, 370, 360, 350, 340	**007-097**
		LEANER		

Important Note:
If your current correct jetting using a TMS Carb falls within this guideline table, you may achieve improved performance with the pro-option kit. Example: TMS 38 with 6DGY04-57 and 360 main jet, choose TMS-JN250/57.

OEM TMX36/38 Needles (633 Series)

For OEM Honda CR125 '00-'01 and CR250 '01

Order No.	*Size*	
		Leaner
003-720	S-4	↑
003-722	S-7	
003-723	S-8	↓
003-724	S-9	**Richer**

TMX Throttle Valves (5.0) for Stock TMX38

Order No. 007-415

(MI No. 832-41018-5.0)
Application: 2001 CR250 O.E.M. Carb

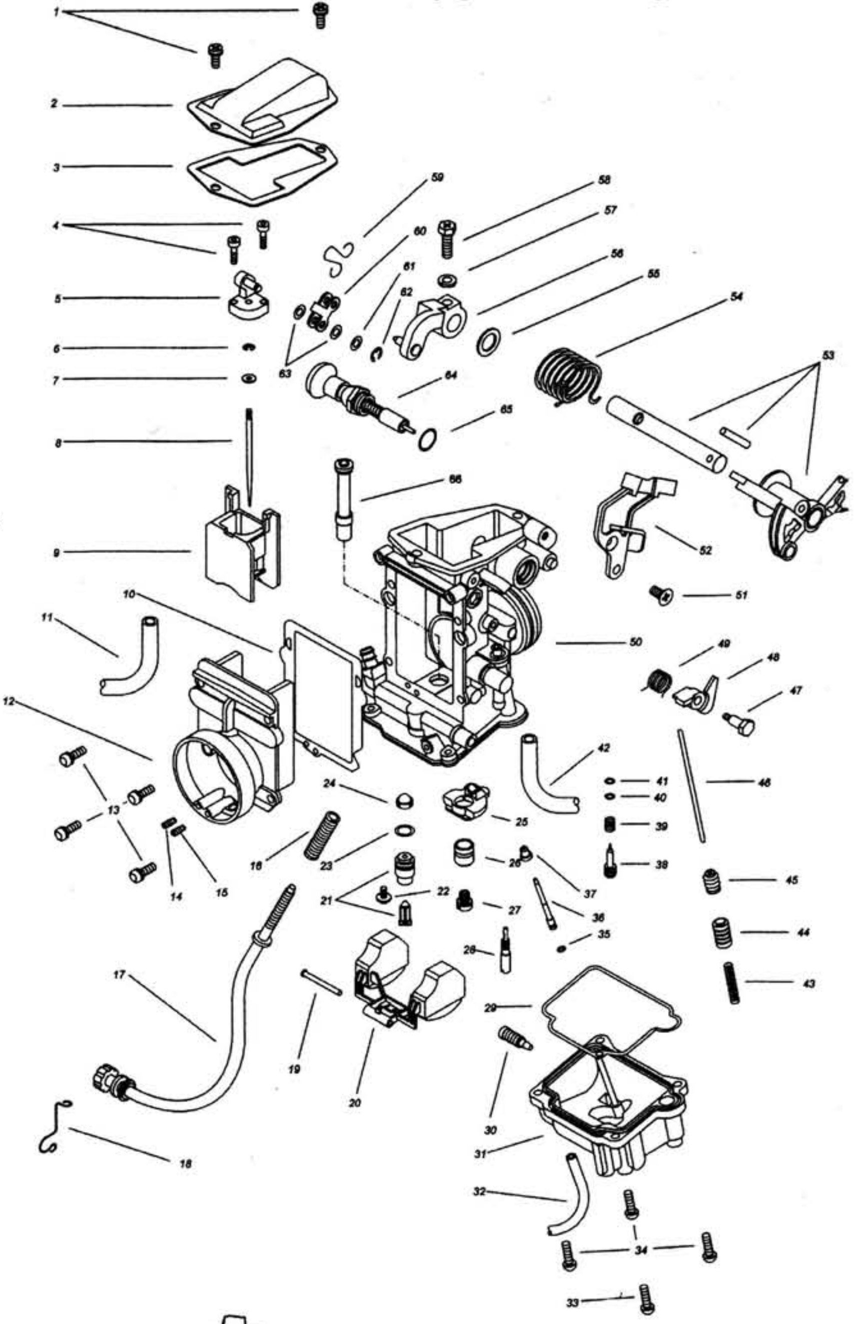
MIKUNI TM 33 FLATSLIDE CARB PARTS & EXPLODED VIEW

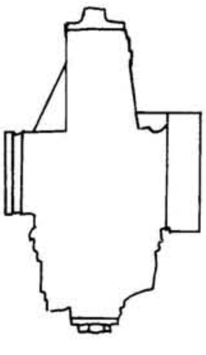
	Description	Mikuni No.	Order No.
1	Screw, Top Cover	CW2=0410	**007-626**
2			
3	Gasket, Top Cover	TM29/17	**007-643**
4			
5			
6	E-Ring	VM20/369	**002-083**
7	Packing	VM26/315	**007-124**
8	Jet Needle	J8-5FP96-3	**Pg. 70**
9	Throttle Valve	832-38007-1.5	**002-948**
10			
11			
12			
13	Screw, Air Funnel	VM38/133	**002-749**
14	Pilot Air Jet	BS30/97-1.1	**Pg. 59**
15	Main Air Jet	BS30/97-0.7	**Pg.59**
16	Spring, Idle Adjuster	730-07008	**007-602**
17			
18			
19	Pin Float	VM30/160	**002-605**
20	Float Assy.	859-34003	**007-606**
21	Needle Valve Assy.	N133.200-1.8	**007-502**
22	Screw, N.V. Holder	VM13/216	**007-174**
23	O-Ring, Needle Valve	KV/10	**002-709**
24	Filter, Needle Valve	VM18/233	**002-606**
25			
26			
27	Main Jet	N100.604-127.5	**Pg. 58**
28	Pilot Jet	VM28/486-37.5	**Pg.59**
29	O-Ring, Float Bowl	619-94012	**007-508**
30	Drain Screw, Float Bowl	N133.363	**007-509**
31			
32			
33	Screw (Long), Float Bowl	C2=0416	**007-622**
34	Screw (Short), Float Bowl	C2=0414	**007-621**
35	O-Ring, A/P Nozzle	N124.063	**007-163**
36	A/P Nozzle	TM29/24	**007-510**
37	Plug, A/P Nozzle	TM29/14	**007-164**
38	Pilot Screw	N138.192	**007-632**
39	Spring, Pilot Screw	N138.187	**007-631**
40	Washer, Pilot Screw	VM12/33	**002-856**
41	O-Ring, Pilot Screw	N133.037	**002-858**
42			
43	Spring, A/P Plunger	730-04003a	**002-867**
44	A/P Plunger	TM29/18	**007-511**
45	Cap, A/P Rod	N150.048	**007-512**
46			
47			
48			
49			
50			
51	Screw, Throttle Bracket	C5=0510	**002-637**
52	Throttle Bracket	TM33/33	**007-648**
53	Throttle Lever	TM33/44	**007-720**
54			
55			
56			
57			
58	Bolt, Throttle Lever	VM28/230	**002-519**
59			
60			
61	Washer, Linkage Lever	M10/56	**002-632**
62	E-Ring, Linkage Lever	BSW28/70	**002-355**
63	Packing, Linkage Lever	B40i/10	**002-629**
64	Choke Assy.	TM33/49	**007-654**
65	O-Ring, Choke Assy.	N138.198	**007-160**
66	Needle Jet - 640 Series	784-24111-P-8	**Pg.60-61**

TM33 Carburetor

Part No. 001-032

see page30 for standard specs.





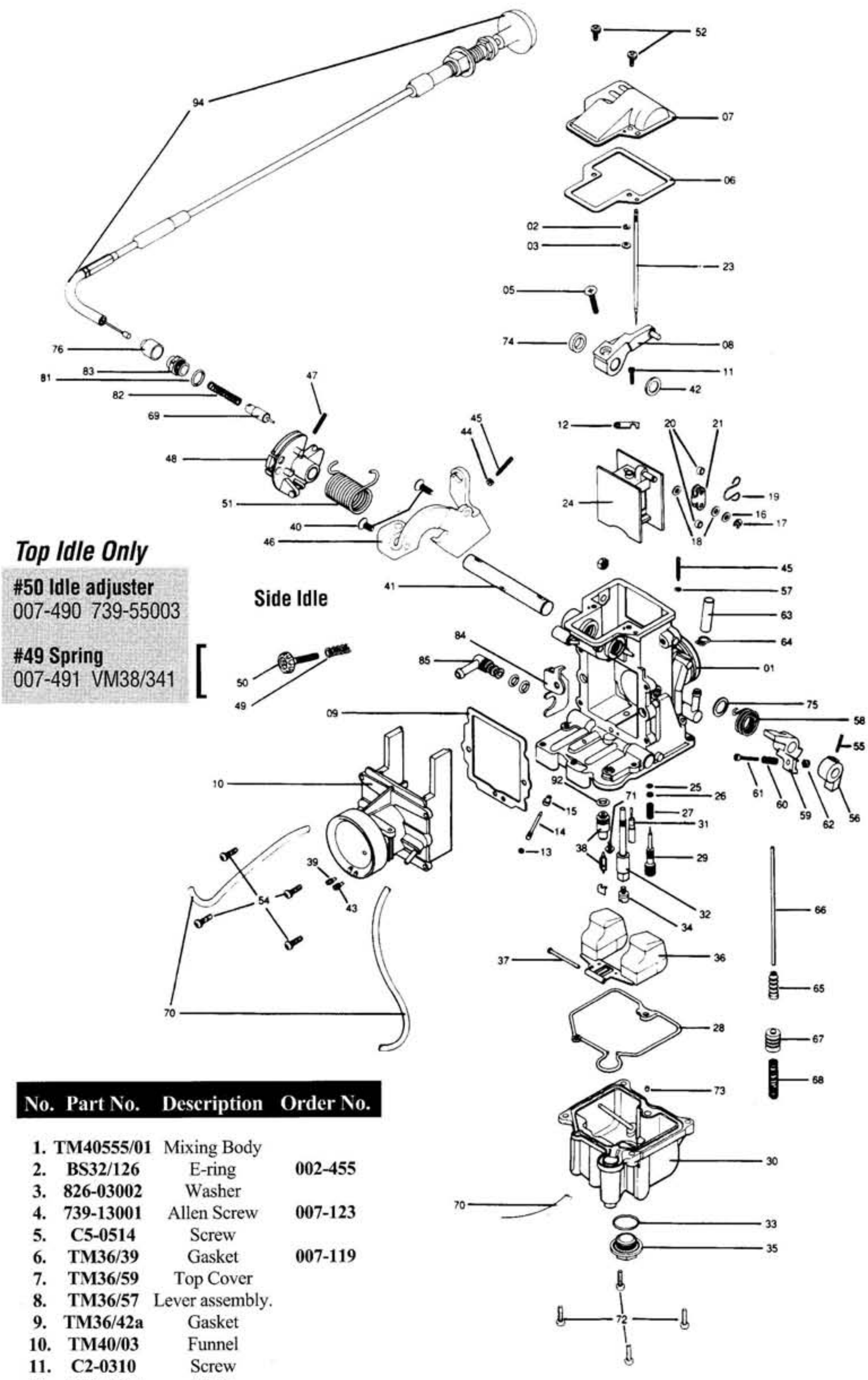
Dimensions (mm)

A	**B**	**C**	**D**
40	93	160	50
Total Width	105		

MIKUNI HS40 (TM40) FLATSLIDE CARB PARTS & EXPLODED VIEW

HS40 (TM40-6) Carburetor

Order No. 001-085



Top Idle Only

#50 Idle adjuster
007-490 739-55003

#49 Spring
007-491 VM38/341

No.	Part No.	Description	Order No.
1.	TM40555/01	Mixing Body	
2.	BS32/126	E-ring	002-455
3.	826-03002	Washer	
4.	739-13001	Allen Screw	007-123
5.	C5-0514	Screw	
6.	TM36/39	Gasket	007-119
7.	TM36/59	Top Cover	
8.	TM36/57	Lever assembly.	
9.	TM36/42a	Gasket	
10.	TM40/03	Funnel	
11.	C2-0310	Screw	
12.	TM36/12	Plate	
13.	N124.063	O-ring, Nozzle	007-163
14.	TM36/43	Pump, Nozzle	007-165
15.	TM29/14	Plug, Nozzle	007-164
16.	M10/56	Washer	002-632
17.	BSW20/70	E-ring	002-355
18.	B401/10	Packing	002-629
19.	TM27/05A	Clip	
20.	TM25/65	Ring	
21.	TM27/04	Plate	
22.	TM36/54	Conn. Plate	007-659
23.	9DJY01	Jet Needle Std.	007-015
24.	TM40/81	Throttle Valve	007-430
25.	N133.037	O-ring	002-858
26.	VM12/33	Washer	002-856
27.	N133.206	Spring	007-137
28.	619-94021	O-ring, Float Bowl	007-197
29.	604-26003	Screw	007-138
30.	TM40/12	F.C.B.	007-663
31.	VM28/486	Pilot Jet	pg.59
32.	784-13002	Needle Jet	pg.60-61
33.	VM28/254	O-ring	002-531
34.	N100/604	Main Jet	pg.58
35.	TM32/41	Drain Plug	007-646
36.	659-32011	Float assembly.	007-141
37.	VM30/160	Pin, float	002-605
38.	786-36007	3.8 N.Valve assembly	002-877
39.	BS30/97	Main Air Jet (plugged)	
40.	C5-0512-B	Screw	007-150
41.	700-15004	Shaft, Throttle	
42.		Packing	
43.	BS30/97	Pilot Air Jet	pg.59
44.	N2-03-B	Hex Nut	007-636
45.	TM36/48	Adj. Screw	007-168
46.	TM40/14	Bracket	007-664
47.	N138.019	Pin	007-171
48.	TM40/23	Lever assembly.	007-665
49.	N150.0-25	Spring Idle Adjust	007-633
50.	TM40/77	Adjuster, idle (Side Idle Only)	007-495
51.	TM40/25	Spring (Side Idle Only)	007-204
52.	CW2-0408	Screw	007-175
54.	VM38/133	Screw	002-749
55.	BN38/43	Pin	007-617
56.	TM36/16	Lever	007-657
57.	B30/205	O-ring	007-188
58.	TM40/33	Spring	
59.	TM36/17	Lever	007-292
60.	M12F/46a	Spring	002-181
61.	MC-0316	Screw	007-193
62.	N3-03-B	Hex Nut	007-194
63.	N148.013	Cap	002-646
64.	BVK28/128	Spring Cap	
65.	TM36/64	Cap	007-195
66.	TM36/44	Rod	007-192
67.	TM36/60	Plunger	007-198
68.	VM14SC13/89	Spring	007-200
69.	VM38/148	Plunger	007-203
70.	888-23026	Hose	007-608
71.	VM13/216	Screw	007-174
72.	C2-0412-B	Screw	007-201
73.	VM17-1002	Starter, Jet	pg.59
74.		Packing, shaft	
75.	E204040	Ring	007-628
76.	VM12/43	Cap, Starter Cable	007-676
81.	N138.198	O-ring	007-160
82.	VM16/42	Spring Starter	002-671
83.	640-12001	Guide Holder	007-161
84.	TM40/26	Plate, Fuel Inlet	
85.	TM40/27	Inlet, Fuel	007-667
92.	KV/10	O-ring N. Valve	002-709
94.	990-662-001	Choke Cable ass'y.	007-209
94B.	TM40/07	Choke Knob	007-684

MIKUNI HS40 (TM40) FLATSLIDE CARB PARTS

Air Filters

The replacement air filters for the HS Series are K&N Air Filters made especially for the HS Series Carburetors.

ITEM #9	Chrome Air Cleaner Cover	007-215
ITEM #10	Replacement Element Only	007-216

Cables

Replacement cables for your HS Series Kit.

ITEM #20	Throttle Cable (Pull)	007-210
ITEM #21	Idle Cable (Push)	007-211

(cables available in +6" and 4"shorter)

Rubber Flange Adapters

Genuine Mikuni rubber flange adapters are available for your Evolution or Sportster/Shovelhead Kit.

ITEM #2	I-VM36-200-1 (HS40-6K)	002-054
ITEM #3	I-VM38-200-1 (HS40-7K)	002-055
	KHS-004 (HS40 ALL)	002-986

Main Jets

#50 to #210 N100.604

Increments of 2.5 (i.e. 160, 162.5, 170, etc.)

Pilot Jets

#12.5 to #50 VM28/486

Increments of .5 (i.e. 20, 22.5, 25, etc.)

Starter Jets

#15 to #100 VM17/1002

Jet Needles

LEAN ↑	9DJY01 (Standard)	007-015
	9DJY02	007-016
RICH ↓	9DJY03	007-017

HS40 Standard Jetting Spec

Pilot Jet	VM28/486 #17.5	004-029
Pilot Air Jet	BS30/97 #1.1	002-156
Needle Jet	568 Y-6	003-666
Jet Needle	9DJY01	007-015
Main Jet	N100.604 #165	004-206

HS40 Carburetor Adapter for 1990 H-D Models with Standard CV40 Carb

To fit HS40-6K Evolution Carburetor Kit to 1990-on Harley-Davidson models equipped with the Keihin 40mm CV carburetor.

Order No. 005-095

Manifold

Sportster Breather Kit (KHS-010)	002-988
Evo Drop Manifold Kit (KHS-009)	002-987

Spigot Adapter Ring

Order No. 005-095

Velocity Stacks

Velocity stacks improve the air flow into the carburetors to increase induction efficiency and increase horsepower on racing engines where air filters are not required. Set of 4 velocity stacks fits all Mikuni RS Series Carburetors and other carburetors with 55mm O.D. intake bells. Choose length depending on chassis clearance and desired tuning characteristics (short length—broad high RPM power; medium length—mid RPM power; long length—low RPM POWER).

Length	*Order No.*
15mm	005-253
30mm	005-250
50mm	005-251
70mm	005-252

Throttle Valves

TM40/81 Order No. 007-430

HS40 Rebuild Kits

Contains all parts necessary to rebuild the HS40 carb.

KHS-001 Order No. 002-985

MIKUNI
GENUINE COMPONENTS

MIKUNI HS40 (TM40)

General Tuning Procedures

Your MIkuni HS40 is fitted with the tuning parts we found to work with a majority of engine tuning combinations. However, the tremendous number of differing exhaust systems and cams available for Harley engines make it impossible to accommodate all possible combinations with one carburetor set-up. You will probably find that the HS40 will run perfectly on your engine without exchanging any parts. But if it doesn't, you may alter its tuning to suit your engines needs by following this guide.

There are many more replaceable parts that affect tuning in the HS40 than in the stock Harley Carburetor. With these parts you will be able to precisely tailor the HS40 to your engine's requirements throughout its rpm and throttle setting range.

Each tuning system is easy to modify and diagnose, but only when you understand what each system does and how it works. Before making any alterations to the HS40, if any are needed at all, read the section of this manual describing the various tuning components and their functional range.There is simply no point in attempting to tune any carburetor unless the engine is completely sound. Valves and rings must seal properly, the ignition timing must be correct and the spark plug clean and gapped. Some exhaust systems may also make carburetor tuning difficult. For instance, it is almost impossible to get smooth responsive carburetion with straight and open pipes. If you have any doubts about the condition of your engine, tune and test it before beginning what could be a frustrating and unproductive effort to fix another problem with the carburetor.

Tuning the Idle Circuit (Pilot System)

The first step in tuning any carburetor is to get the idle circuit correctly adjusted. And the first step in this procedure is to adjust the pilot screw position for best idle. Mikuni sets the pilot screw at three turns open during assembly. This is the position we have found to be right most of the time. If the screw position has been altered, gently bottom it and re-open to three turns out from the fully closed position.

Next, ride the bike until the engine is at its normal operating temperature. This may require several miles at highway speeds. If you have an oil temperature gauge, ride until the oil temperature is at or near 150 degrees.

WIth the machine vertical and the engine idling near 1,000 rpm, adjust the the pilot screw in one half turn at a time until the idle either slows or becomes irregular. The pilot screw is now in too far and the idle mixture is too lean. Pause for a few seconds at each half turn to allow the engine to settle down and give a clear indication of the mixture strength.

Now, begin turning the screws out in half turn intervals until the engine again slows or begins an irregular ride. Count the turns between the too lean and too rich positions.

Set the pilot screw mid-way between the too-lean and too-rich positions. You may further refine the pilot screw position with further riding experience but this will be very close to the perfect idle mixture setting.

If you allow the engine to get too hot during the pilot screw adjustment procedure, the resulting adjustment will probably be on the lean side of correct. If you have a large fan use it while adjusting the idle mixture. If you do not have one, you may need to take time out for a short ride to cool the engine back to normal temperature.

Remember, if the best ride is achieved with the pilot screw less than 1/4 turn out, the pilot jet is too large or the pilot air jet is too small. One or the other will need to be changed.

On the other hand, if the pilot screw must be more than three and a half turns out for best idle, the pilot jet is too small (or the pilot air jet is too large). One or the other will need to be changed.

If the pilot screw's best idle position is outside the 1/4 to 3-1/2 turn range, the carburetor's mixture will be either too lean or too rich as the throttle is just being raised off the idle position. Once you have a good idle with the screw within this range, you may proceed to the next stage: tuning the needle jet. The pilot air jet is selected by riding at 15 to 30 mph. If the engine surges or detonates (lean), the pilot air jet should be reduced in size. Example: 1.1 to 1.0 If on the other hand the engine misfires or there is after burn from the exhaust (rich), it would indicate the pilot air jet is too small. If the air jet is changed, the pilot screws should be re-checked and adjusted if needed.

As mentioned earlier, the idle circuit has an important effect on mixtures up to quarter throttle. However the idle system's effect on mixture strength overlaps the effect of the needle jet in this range. If the idle circuit is incorrectly adjusted, it will not be possible to to get the needle jet correct.

Tuning the Needle Jet

It is unlikely that you will need to change the needle jet from the one supplied in your Mikuni HS40. However, in case you do, you should be aware of how it works and how to tell if the one you have is too large (richer) or too small for your particular engine set up.

The needle jet's effect on mixture is limited from about 1/16 throttle, where the main system begins to deliver fuel, to 1/4 throttle, when the tapered section of the needle begins to emerge from the mouth of the needle jet.

Lean Condition

If the needle jet is too (lean) small, part throttle acceleration will be flat. There may also be some detonation during part throttle acceleration although this can be caused by other factors. A lean needle jet will result in a slow warm up.

If part throttle acceleration is flat, install a one size larger needle jet and compare the performance. If acceleration is improved, leave the larger jet in and take a fairly long ride at steady speeds to give the spark plugs time to color evenly.

Take a spark plug wrench with you and after a few miles at steady speeds, stop and remove a plug for inspection. Be careful as you stop not to operate the throttle. The extra fuel from the accelerator pump can cause a false plug reading. The body of a spark plug can be from light grey to brown to dark grey. If the plug body is black, and has a sooty appearance then the needle jet is probably too rich and a smaller one will need to be fitted.

Rich Condition

While a black and sooty spark plug is a sure sign of richness, there are others that are a bit more subtle. If your engine responds crisply, at low throttle when it is cold, chances are the needle jet is one size larger than it needs to be. Assuming, of course, that the idle circuit is correctly tuned and adjusted.

Poor fuel mileage is another sign of richness and because of the way most of us ride our Harleys, that richness is usually the result of a needle jet that is too large. The color of the end of the exhausts is a sign of mixture strength. Dark grey with some black is normal for today's lead free gasoline. If the exhaust color is black, chances are that you can reduce the size of the needle jet.

Tuning the Jet Needle

Like the idle circuit, the jet needle within its range of operation, has a gradually increasing effect on fuel mixture as the throttle is opened. From about 1/4 throttle, where the tapered section of the needle leaves the mouth of the needle jet, the jet needle has a major effect on the amount of fuel entering the engine. Between 1/2 and 3/4 throttle the needle's influence is greatest and it controls most of the fuel flow.

All jet needle and main jet testing should be done with the engine near the middle of its rpm range. Start your acceleration tests at about 50 mph. The best jet needle position will give the strongest acceleration.

With the engine at operating temperature, accelerate at 1/2 to 3/4 throttle, in top gear from 50 mph or so. If acceleration seems soft or flat and the engine is slow to respond when the throttle is quickly opened from 1/2 to 3/4 throttle position, the mixture is too lean. Raise the jet needle one notch and repeat the test.

On the other hand, if acceleration is crisp but the engines hesitates or staggers as the throttle suddenly shut down from 3/4 to 1/2 throttle, the mixture is too rich. Lower the needle one notch and repeat the test.

The jet needle position will be near correct when acceleration is crisp at mid rpm yet the engine does not load up during throttle shut down.

Tuning the Main Jet

You could, in fact, remove the main jet from your Mikuni HS40 and the engine would run fine until the throttle was near the 3/4 mark. The needle and needle jet restrict the amount of fuel getting into the engine until about that point. There is no need to change main jets if a mixture problem exists below the 3/4 throttle position.

The main jet is the last jet you need to deal with, and it is the easiest to get right. The most effective method for getting the main jet right is to measure the time required to accelerate between two points.

The start and end markers should be spaced so that starting at about 35 mph at the first marker will have you going past the second at near 55 mph. Set up markers that are far enough apart, on a safe road, to meet the conditions mentioned above. When you pass the first marker roll the throttle fully open and have a friend (it's easier with help) measure the time needed to get to the second marker. The jet that gives the shortest time is the correct jet. This method is simple but effective.

Accelerator Pump Tuning - Fig 9

The beginning point of the pump stroke is adjusted with adjusting screw #1 on the white plastic pump lever. To start the pump sooner, back the screw out. Turn the screw in to make the pump start its stroke at a larger throttle opening. Most engines will perform best if the pump begins its stroke as soon as the throttle is moved from the idle position.

The end of the accelerator pump stroke is adjusted by the adjusting screw #2 located on the top of the carburetor just behind the pump lever. Best performance is generally achieved when the pump stroke ends at 3/4 throttle.

It is important that the nozzle's direction be correctly set. The nozzle is held in position by the friction of it's O-ring and can be turned quite easily with a pair of long nosed pliers. Rotate the nozzle until the fuel stream strikes the needle. This will ensure an even distribution of fuel between the front and rear cylinders. Nozzle adjustment should be made with the engine stopped and with a minimum of pump strokes to avoid flooding.

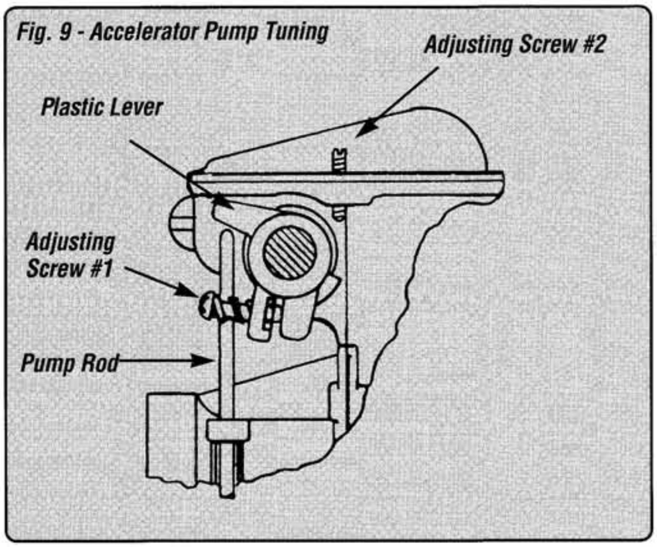


Fig. 9 - Accelerator Pump Tuning

Fine Tuning the Pilot System

Note: Before you apply any of the information in this section be sure that the basic pilot system is correct. Be sure that your engine idles smoothly with the mixture screw between one and three turns out from the seated position.

The pilot and pilot air jets have slightly different effects on mixture strength within the effective tuning range of the pilot system: 0 - 1/4 throttle. When you change the pilot jet, it will have a slightly greater effect on mixture strength at zero throttle than it will at 1/4 throttle.

On the other hand, when you change the pilot air jet, it will have a slightly greater effect above 1/8 throttle than it will below that setting.

If your engine has slightly soft acceleration just as the throttle is raised from the off idle position, the size balance between the pilot jet and pilot air jet may be incorrect. If the softness is more pronounced when the engine is at normal running temperature, install a larger (leaner) pilot air jet. If there is minor coughing or "popping" through the carburetor when the engine is cool, install a smaller (richer)pilot air jet.

After you have changed the pilot air jet, you will need to re-adjust the the mixture screw. If the new mixture screw adjustment is outside the one to three turn range, change the pilot jet. If the mixture screws give idle at more than three turns, install the next larger (richer) pilot jet. If, on the other hand, correct idle requires less than one turn, fit the next smaller pilot jet.

It is unlikely that changing the pilot jet will have an adverse effect on the pilot air jet requirement.

Important Note: Detecting Air Leaks

While the engine is idling, spray carburetor or brake cleaner around the areas of the intake tract where there are mating surfaces, i.e., cylinder head to compliance fitting.

If there is an air leak the engine RPM will increase or decrease when the spray covers or is drawn through the leaking area into the engine.

MIKUNI HS40 (TM40)

There are very few moving parts in the HS Series carburetor. This carburetor will not require much servicing, but there are a few items to be mentioned to assure good performance season after season.

A. If the motorcycle is to be stored for any length of time the carburetor float bowl should be drained.

B. The float drain plug should be removed periodically and cleaned of any sediment that may have settled during long periods of use.

C. DO NOT drill or modify any part of this carburetor for any reason ad the result will surely be more problems. Refer to this Tuning guide to correct any problems that you may have.

D. If a jet or passage does become plugged, use only carburetor cleaner and compressed air. DO NOT push a drill or any other object through the jet or passage to clean them.

E. The fuel level in the carburetor will probably never need adjusting; however, if a problem has been diagnosed as a fuel level that is too high or too low, adjustment can be done as shown in Figure 10.

F. If the air filter is dirty and requires servicing, follow these steps. Typical service is done after about 20,00 miles of use.

Air Filter Service Instructions

A. Pre Cleaning: Tap the element to dislodge any large embedded dirt, then gently brush with a soft bristle brush.

B. Pan Cleaning: Soak or roll element in a large shallow pan of K&N air filter cleaner (1/4 the depth of 1 pleat). Remove immediately and let sit for approximately 10 minutes.

C. Rinse Off: Rinse off the element with low pressure water, tap water is OK. Always flush from the inside of the filter out. This removes the dirt and does not drive it into the filter. IMPORTANT: Air dry only.

D. Oiling: After the filter has dried always re-oil before using. Apply K&N air filter oil with one pass per pleat. Wait 10 minutes and re-oil any white spots still showing. IMPORTANT: Do not use gasoline or cleaning solvent to service the filter element as this will damage the filter.

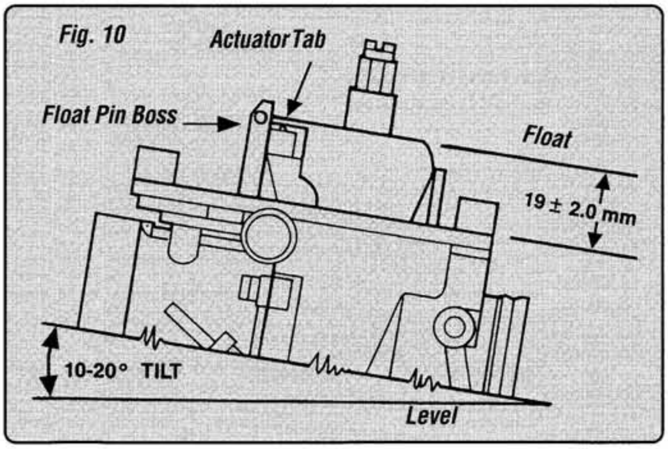
Float Level Adjustments

A. Invert the carburetor and remove the float bowl.

B. The float assembly's actuator tab should just begin contact with the Needle Valve assembly when the bottom of the float is 18mm from the carburetor bottom surface as shown.

C. If adjustment is required, adjust by bending the actuator tab.

Fig. 10

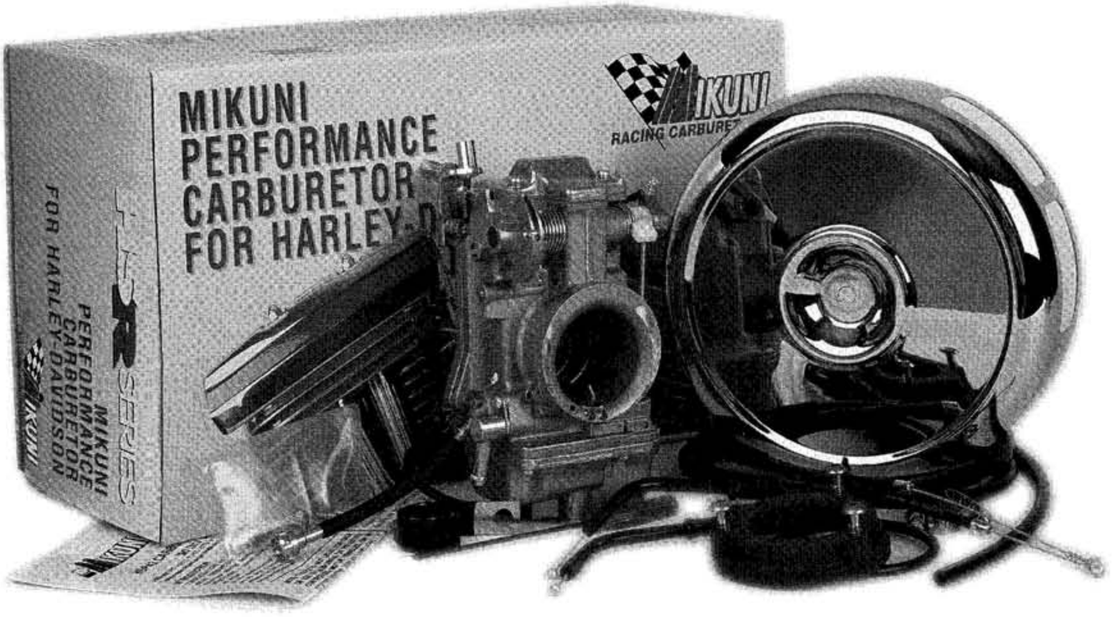


Troubleshooting Guide

Check for:	Remedy:
Overflow	
1 Worn needle valve or dirty valve seat.	1. Replace or clean.
2. Improper fuel level in float bowl	2. Adjust level.
3. Damaged float bowl O-ring gasket.	3. Replace O-ring.
4. loose float bowl screws.	4. Tighten screws.
5. Pressurized fuel tank.	5. Check for proper fuel tank venting.
6. Broken needle valve O-ring.	6. Replace O-ring.
Poor Idling	
1. Fuel filler cap not venting.	1. Replace filler cap.
2. Idle speed improperly adjusted.	2. Adjust idle speed.
3. Clogged bypass or outlet.	3. Clean carburetor.
4. Clogged pilot jet.	4. Clean jet.
5. Loose pilot jet.	5. Tighten Jet.
6. Air leak in system.	6. Tighten manifold or hose clamps.
7. Choke not fully closed.	7. Adjust Cable.
8. Crank vent blocked.	8. Remove blockage from hose or passage.
Poor Fuel Economy	
1. Fuel filler cap not venting.	1. Replace filler cap.
2. Fuel level too high (overflow)	2. Adjust level.
3. Loose jets.	3. Tighten jets.
4. Choke not fully closing.	4. Adjust cable.
5. Dirty air cleaner.	5. Clean or replace.
Poor Acceleration	
1. Clogged accelerator system.	1. Clean
2. Clogged Pilot jet.	2. Clean.
3. Fuel level too low.	3. Adjust level.
Hard Starting	
1. Choke not operating properly.	1. Adjust cable.
2. Generally dirty carburetor.	2. Clean.
3. Air leak in system.	3. Tighten manifold or hose clamps.
4. Excessive use of throttle before starting engine.	4. Do not open throttle before starting.
Poor Performance on the Road	
1. Fuel filler cap not venting.	1. Replace filler cap.
2. Fuel level incorrect.	2. Adjust level.
3. Main jet loose.	3. Tighten jet.
4. Air leak in system.	4. Tighten manifold or hose clamps.
5. Generally dirty carburetor.	5. Clean.
6. Dirty air filter.	6. Clean or replace.
Poor High Speed Performance	
1. Fuel filler cap not venting.	1. Replace filler cap.
2. Loose main jet.	2. Tighten jet.
3. Incorrect fuel level.	3. Adjust level.
4. Strainer in fuel tank dirty.	4. Clean.
5. Clogged main jet	5. Clean.
6. Fuel level too low.	6. Adjust level.

Note: Extreme care should be used whenever removing the float pin; the pin is a "press fit" into the support bosses. If you must remove the pin for any reason, use caution to prevent breakage of the support bosses.

MIKUNI HSR42/45/48 SMOOTHBORE CARBS



Mikuni HSR42, 45 & 48 Carburetor Kits for Harley

Mikuni has followed up on its successful HS40 Carburetor with the advanced technology second generation performance carburetor called the ***HSR42***. The designation HSR42 denotes a smoothbore racing carburetor with a 42mm venturi for Harley-Davidson applications.

The HSR42 and its big brothers the HSR45 and HSR48 were designed with a larger body assembly to fill the need for bigger throttle bores in all-out performance applications. All HSR carburetors are designed with an 8-roller bearing flat throttle slide assembly that allows an unobstructed venturi at full throttle to flow more air, while it carburetes more precisely at all throttle settings. Mikuni's roller bearing throttle slide offers smoother throttle control and allows the use of a lighter throttle return spring for reduces throttle effort. And the Mikuni adjustable accelerator pump provides instant throttle response in any riding or performance applications. Other performance features include a larger capacity float bowl and a higer flowing needle valve assembly to accomodate extended full throttle operation. Most aftermarket carburetors use butterfly throttle valves which obstruct the carburetor's venturi at all throttle openings, creating airflow turbulence and hindering precise air/fuel metering.

Flow bench tests show that the new Mikuni HSR42, HSR45 and HSR48 are able to flow more air to the engine once installed on the manifold and head than other models of aftermarket big-bore carburetors.

This is because other big venturi carburetors have that restrictive butterfly throttle valve which disrupts and hinders air flow. The HSR's actually flow more air at full throttle to produce more peak power than other bigger carburetors. While at smaller throttle openings the Mikuni's smaller, yet higher velocity flowing venturi, together with its advance fuel metering system provides a strongeroverall power bank with improved ridability.

Air Flow		
	Stock:	**185 CFM**
	HSR42:	**213 CFM**
	HSR45:	**237 CFM**
	HSR48:	**270 CFM**

MIKUNI HSR42/45/48 SMOOTHBORE CARBS

HSR Series Carburetors for Harley-Davidson

The new Mikuni HSR Series carburetors were designed for Harleys to improve overall power, drivability and gas mileage. Keeping this in mind, we set out to build this all new carb with the latest in carburetor technology. The HSR Series brings all of this to you in easy, bolt-on kits featuring:

HSR48-2 Kit Order No. 001-635

Kit includes:rubber mounting flange, choke cable, remote idle adjuster and additional jets.

Legal Kits

In California you may install this ***Legal Kit*** with all stock components and meet current emission standards while enjoying 8 more horsepower. Each kit includes a special emissions exempt Mikuni HSR42 carb and all necessary hardware with easy-to-follow instructions.

'95 to '98 1340 Big Twin Evo (42-6) 001-601
(models sold in California)

Easy Kits

Keep your stock look with our uniquely designed ***Easy Kit***. Continue to use your stock manifold, choke cable and black plastic air box or the Screamin' Eagle performance filter. Each kit includes the Mikuni HSR42 Carburetor, air box adapter, and instructions.

'90 to '99 1340 Big Twin Evolution (42-7) 001-602
(Note: Use stock air cleaner, choke cable and stock manifold. Comes with chrome cover.)

'94 to '01 1200 Sportster (42-10) 001-605
(Note: Complete w/back plate & spacers. Use throttle cables from 90-present EVO.)

'99 Dyna/FLH TC88 (42-18) 001-621
(Note: Use stock air cleaner, choke cable and stock manifold.)

'94 to '01 1200 Sportster & Buell S2 (42-11) 001-606
(Note: Use S.E. air filter or stock air box for S2 Buells. Use Throttle cables from 90-present EVO. All Buells equipped with 7/8" handlebars can use 42-11 but will require special cables*)*

Race Kits

The Mikuni HSR45 carb flows a great deal of air and therefore is the choice of many high performance engine builders. Choose the #2 Race Kit for engines not needing a wider manifold and the #3 Race Kit if you already have a manifold. Consult your engine builder for additional details.

Built 80ci and up Evolution (45-2) 001-610
(Note: This kit includes everything in Total Kit. Manifold may not fit a stroker motor. The '93 and later models will require the optional breather kit number KHS-020.)

Built Customs / Strokers (45-3) 001-611
(Note: This kit does not have a manifold. Other aftermarket manifolds can be used, ask your dealer. '96 and later models require push-in style cables.)

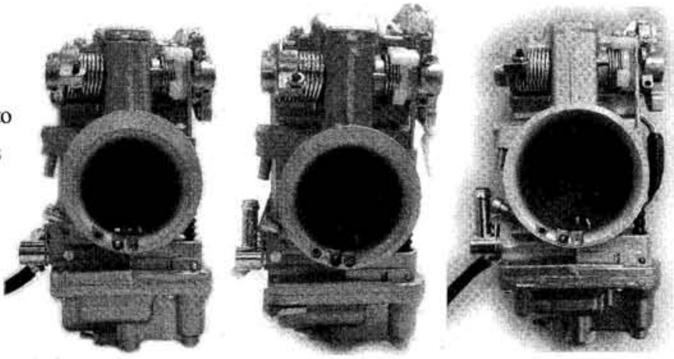
Total Kits

Total Kits give you everything needed for a complete installation. Includes performance intake manifold, rubber flange, 42mm carb, high flow K & N filter, chrome cover, breather kit and hardware. Stock cables from 1990 and later Big Twins may be used.

'84 to '99 1340 Evolution (42-8) 001-603
(Note: The 84-89 models will require new throttle cables from 90-95. Complete with breather kit.)

Twin Cam 88 '99 to '01 (45-4) w/ manifold 001-630

Twin Cam 88 '99 to '01 (42-19) w/ manifold 001-622



HSR42 HSR45 HSR48

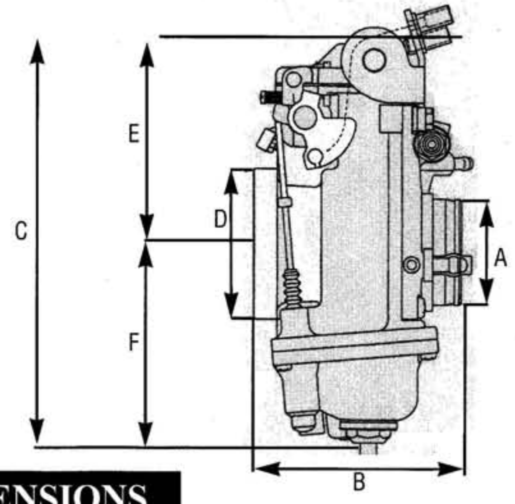
Mikuni HSR Individual Carburetors

Individual Mikuni HSR Carbs are sold without choke cables. All optional choke cables (Order No. 021-208) are sold separately or use stock H-D CVK carb choke cable.

42mm Carb Only	TM42-6	001-549
42mm Carb Polished	TM42-6P	001-551
45mm Carb Only	TM45-2	001-554
45mm Carb Polished	TM45-2P	001-555
48mm Carb Only	TM48-1	001-558

Standard Jetting Specifications

	42	45	48
Main Jet	160	175	190
Pilot Jet	30	25	25
Needle Jet	723 Y-6	723 Y-6	723 Y-6
Jet Neddle	97	97	97
A/P Nozzle	70	70	70
N.V. Assy	4.2	4.2	4.5



DENENSIONS

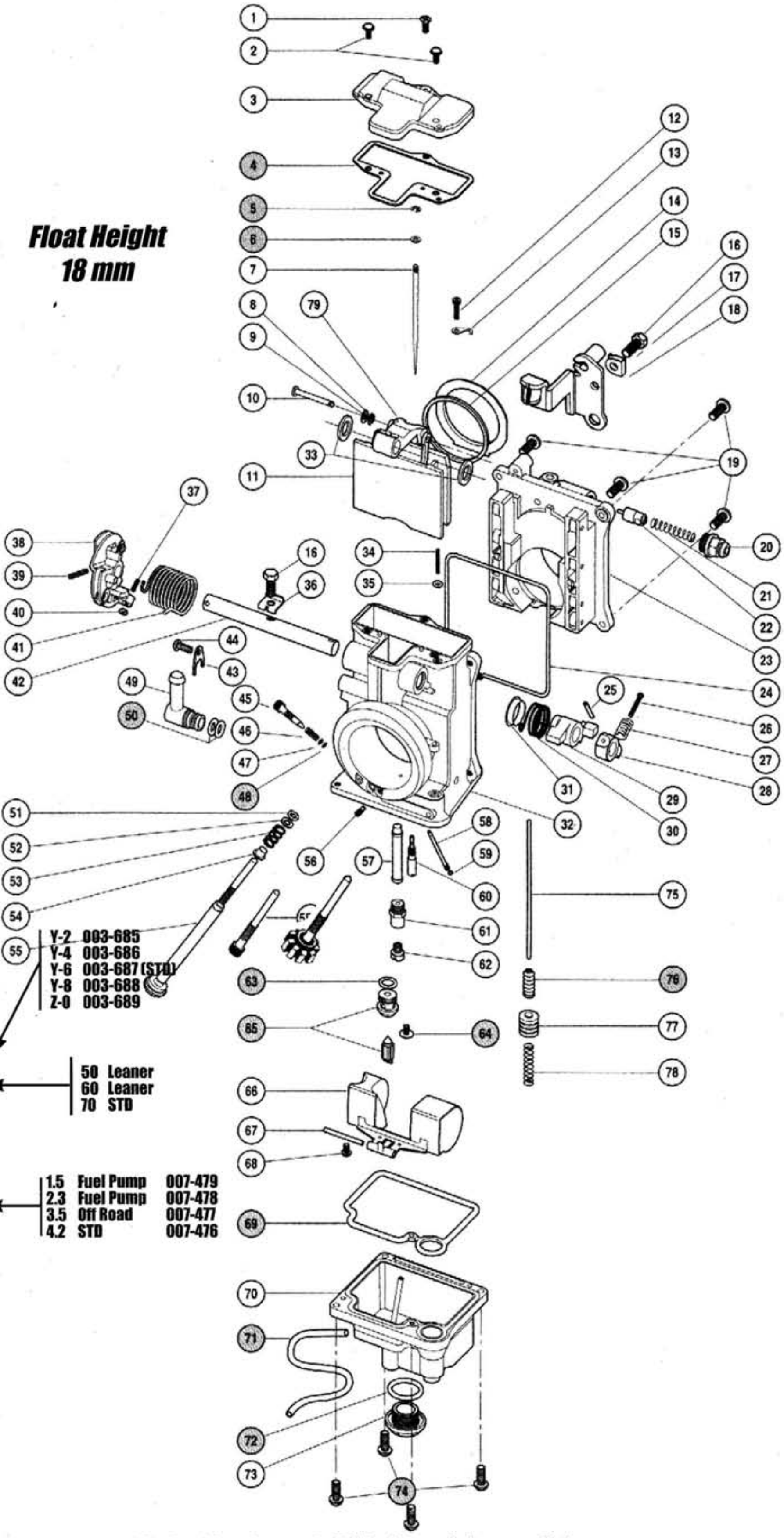
	42&45	48
A	49	53
B	91	91
C	132	136
D	65	65
E	64	65
F	68	71

MIKUNI HSR42/45 PARTS & EXPLODED VIEW

PART NUMBER (000-000)= NO AVAILABLE STOCK
HSR 42/45 REBUILD KIT (KHS-016) 002-989
PART NUMBERS CIRCLED IN GRAY ARE INCLUDED IN REBUILD KIT.
Exploded view of HSR series Harley smoothbore carbs
HSR42 & HSR45 for racing applications.

No.	Mikuni Part #	Description	Order No.
1.	C5-0410B	Screw, Top Cover (flathead)	007-624
2.	CW2=0414B	Screw, Top Cover	002-522
3.			
4.	TM42-04	Gasket, Top Cover	007-480
5.	BS32/126	E-Ring, Jet Needle	002-455
6.	826-03002	Washer, Needle Clip	007-267
7.	J8-8DDY01	Jet Needle (std=97 for HSR42)	007-082
	J8-8CFY02	Jet Needle (std=97 for HSR45)	007-102
8.	B40I/56	E-Ring	007-616
9.	B40I/10	Packing, Link Lever	002-629
10.			
11.	TM42/08	Throttle Valve	007-432
12.	739-13001	Screw, Needle Retainer Clip	007-123
13.	TM42/16	Clip, Needle Retainer	007-671
14.			
15.	TM42/10	Seal, Throttle Valve	007-670
16.	TM40/89	Bolt	007-669
17.	TM42/38	Plate, Lock Tab	007-675
18.	TM42/34A	Bracket, Cable	007-294
19.			
20.	640-12001	Guide Holder (Starter)	007-161
21.	VM14/241	Spring, Starter Plunger	007-678
22.	N189-192	Starter Plunger	007-635
23.			
24.	616-94029	Seal, Spigot Body	007-473
25.	BN38/43	Pin, A/P Lever	007-617
26.	MC-0316-B	Screw, A/P Adjuster	007-193
27.	M12/46-BB	Spring, A/P Adjuster	007-629
28.			
29.			
30.			
31.			
32.			
33.			
34.			
35.	B30/205	O-Ring, A/P Screw	007-188
36.			
37.			
38.	TM42/20	Lever Assy, Throttle	007-673
39.	N138.019	Pin, Throttle Lever	007-171
40.	N3=04	Nut, Throttle Stop Screw	007-637
41.	TM42/19	Spring, Throttle Return	007-672
42.			
43.			
44.			
45.	VM20/584	Screw, Pilot Air Adjusting	002-850
46.	N133.206	Spring, Pilot Air Screw	007-137
47.	VM12/205	Washer, Pilot Air Screw	007-482
48.	N133.037	O-Ring, Pilot Air Screw	002-858
49.	TM40/27	Fuel Joint	007-667
50.	KV/10	O-Ring, Fuel Joint	002-709
51.	B30/398	Packing, Idle Adjuster	007-614
52.	VM22/138	Washer, Idle Adjuster (Steel)	007-680
53.	730-09018	Spring, Idle Adjuster	007-603
54.	925-15001	Ring, Idle Adjuster (Brass)	007-612
55.	TM42/32	Idle Adjuster Assembly (Long)	007-674
55a.	999-606-006	Idle Adjuster Screw (Short)	007-484
56.	BS30/97-00	Air Jet (Blank)	002-149
57.	784-430000	Needle Jet (723 Series std=Y-6)	Pg. 60-61
58.	TM42/11-70	Nozzle, Accelerator Pump	007-487
59.	N124.063	O-Ring, A/P	007-163
60.	VM28/486-30	Pilot Jet (std size=#30)	Pg. 59
61.			
62.	N100.604-160	Main Jet (std size=#160)	Pg. 58
63.	616-3303	O-Ring, N.V.	007-470
64.	VM13/216	Screw with Washer, N.V. Retainer	007-174
65.	786-27001-4.2	Needle Valve Assembly w/ O-Ring	007-476
66.	859-32027	Float Assembly	007-497
67.	BV26/22	Pin, Float	002-107
68.	C2=0410	Screw, Float Bowl (4)	007-620
69.	616-94028	Packing, Float Bowl	007-472
70.	TM42/05	Float Bowl	007-500
71.	N122.028	Hose, Overflow	007-630
72.	VM28/254	O-Ring, Drain Plug	002-531
73.	TM32/41	Drain Plug	007-646
74.	C2=0412-B	Screw, Float Bowl (4)	007-201
75.	TM36/44-1A	Rod, A/P	007-191
76.	TM36/64	Boot, A/P	007-195
77.	TM36/60	Plunger, A/P	007-198
78.	VM14SC13/89	Spring, A/P	007-200
79.			

***Denotes Parts for HSR45 that have different part numbers than shown for HSR42. Further, jetting components for HSR45 (such as main jet, pilot jet, jet needle, needle jet, etc.) may be different form those in HSR42.**



Float Height* *18 mm

Y-2 003-685
Y-4 003-686
Y-6 003-687 (STD)
Y-8 003-688
Z-0 003-689

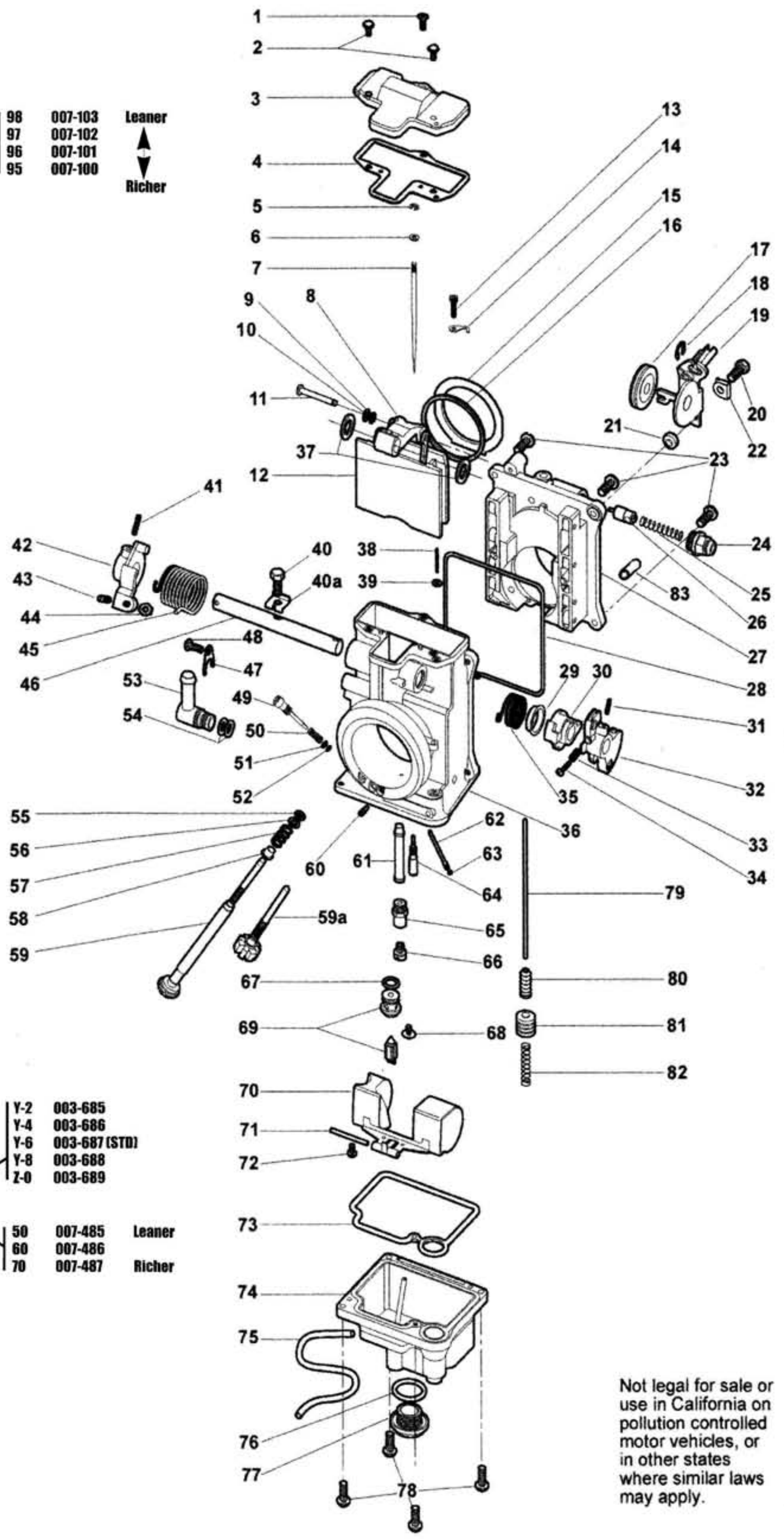
50 Leaner
60 Leaner
70 STD

1.5	**Fuel Pump**	**007-479**
2.3	**Fuel Pump**	**007-478**
3.5	**Off Road**	**007-477**
4.2	**STD**	**007-476**

Not legal for sale or use in California on pollution controlled motor vehicles, or in other states where similar laws may apply.

MIKUNI HSR48 PARTS & EXPLODED VIEW

No.	Mikuni No.	Description	Order No.
1.	C5=0414-B	Screw, Top Cover	007-624
2.	CW2=0416-B	Screw, Top Cover (2)	002-615
3.	111-776-001	Top Cover	007-691
4.	TM42/04	Gasket, Top Cover	007-480
5.	BS32/126	E-Ring, Jet Needle	004-455
6.	826-03002	Washer, Needle Clip	007-267
7.	J8-8CFY02	Jet Needle (Std.=#97)	
8.	N/A	Lever, T.V.	N/A
9.	B40I/56	E-Ring	007-616
10.	B40I/10	Packing, Link Lever	002-629
11.	N/A	Pin, Link Lever	N/A
12.	TM42/08-1A	Throttle Valve	007-433
13.	739-13002	Screw, Needle Retainer	007-692
14.	TM42/16	Clip, Needle Retainer	007-671
15.	TM48/04	Sealing Ring, T.V.	007-715
16.	TM42/10	Seal, Throttle Valve	007-670
17.	925-98006	Pulley, Cable Bracket	007-693
18.	53974	E-Ring, Cable Bracket	007-694
19.	TM42/51	Bracket Assy., Cable	007-695
20.	B3=0520-B	Bolt	007-696
21.	VM28/204	Spacer	007-697
22.	TM42/38	Plate, Lock Tab	007-675
23.	C2=0514-B	Screw	007-698
24.	640-12001	Guide Holder (Starter)	007-161
25.	VM14/241	Spring, Starter Plunger	007-678
26.	N189.192	Starter Plunger	007-635
27.	N/A	Body Assy., Bearing & Spigot	N/A
28.	616-94029	Seal, Spigot Body	007-473
29.	N/A	Ring (Seal)	N/A
30.	TM42/43	Lever	007-699
31.	N138.019	Pin, Throttle Lever	007-171
32.	TM42/48	Lever, Throttle	007-700
33.	M12F/46-BB	Spring, Accel. Pump	007-629
34.	MC0316-B	Screw, Accel. Adjust	007-193
35.	N/A	Spring, Accel. Pump	N/A
36.	N/A	Mixing Body Assy.	N/A
37.	B36/95	Packing, Shaft (Plastic)	007-615
38.	TM42/36	Adjusting Screw, A/P	007-701
39.	B30/205	O-Ring, A/P Screw	007-188
40.	TM42/89	Bolt	007-702
40a.	TM42/17	Lock Tab, Shaft	007-703
41.	BM38/43	Pin, A/P Lever	007-617
42.	N/A	Lever, Return Spring	N/A
43.	N/A	Screw, Throttle Stop	N/A
44.	N3=04	Nut, Throttle Stop	007-637
45.	TM42/19	Spring, Throttle Return	007-672
46.	N/A	Shaft, Throttle	N/A
47.	TM42/15	Plate, Fuel Joint Retainer	007-704
48.	C2=0410-B	Screw, Fuel Joint Retainer	007-705
49.	604-26014	Screw, Pilot Air Adjusting	007-706
50.	N133.206	Spring, Pilot Air Screw	007-137
51.	VM12/205	Washer, Pilot Air Screw	007-482
52.	N133.037	O-Ring, Pilot Air Screw	002-858
53.	TM40/27	Fuel Joint	007-667
54.	KV/10	O-Ring, Fuel Joint (2)	002-709
55.	B30/398	Packing, Idel Adjuster	007-614
56.	VM22/138	Washer, Idle Adjuster (Steel)	007-680
57.	730-09018	Spring, Idle Adjuster	007-603
58.	925-15001	Ring, Idle Adjuster (Brass)	007-612
59.	TM42/32	Idle Adjuster Assy (Long)	007-674
59a.	990-605-065	Idle Adjuster Screw (Short)	007-484
60.	BS30/97-00	Air Jet (Blank)	002-149
61.	784-430000	Needle Jet (723 Series std=Y-6)	Pg. 60-61
62.	TM42/11	Nozzle, Accelerator Pump (std=#70)	
63.	N124.063	O-Ring, A/P Nozzle	007-163
64.	VM28/486	Pilot Jet (std=#25)	Pg. 59
65.	TM42/12-1A	Extender, Main Jet	007-707
66.	N100.604	Main Jet (std=#190)	Pg. 58
67.	616-33003	O-Ring, N.V.	007-470
68.	VM13/216	Screw, w/Washer, N.V. Retainer	007-174
69.	786-27002-1A	N.V. Assy. w/ O-Ring (size 4.5)	007-708
70.	859-32027	Float Assy.	007-497
71.	BV26/22	Pin, Float	002-107
72.	C2=0410	Screw, Float Pin	007-620
73.	616-94028	Packing, Float Bowl	007-472
74.	TM42/05	Float Chamber Body	007-500
75.	N122.028	Hose, Overflow	007-630
76.	VM28/254	O-Ring, Drain Plug	002-531
77.	TM32/41-1D	Drain Plug	007-713
78.	C2=0412-B	Screw, Float Bowl (4)	007-201
79.	TM36/44-1B	Rod, A/P	007-714
80.	TM36/64	Boot, A/P Rod	007-195
81.	TM36/60	Plunger, A/P	007-198
82.	VM14SC13/89	Spring A/P	007-200
83.	N198.063	Cap, Purge Port	007-716



98	007-103	Leaner
97	007-102	
96	007-101	
95	007-100	Richer

Y-2	003-685
Y-4	003-686
Y-6	003-687 (STD)
Y-8	003-688
Z-0	003-689

50	007-485	Leaner
60	007-486	
70	007-487	Richer

Not legal for sale or use in California on pollution controlled motor vehicles, or in other states where similar laws may apply.

HSR Carburetor Rebuild Kit

HSR 42/45 Rebuild Kit (KHS-016) **Order No. 002-989**

Jet Needles

HSR42	**Order No.**	**HSR45 & 48**	**Order No.**
J8-8DDY01-95	**007-080**	J8-8CFY02-95	**007-100**
J8-8DDY01-96	**007-081**	J8-8CFY02-96	**007-101**
J8-8DDY01-97	**007-082**	J8-8CFY02-97	**007-102**
J8-8DDY01-98	**007-083**	J8-8CFY02-98	**007-103**

Standard HSR42/45 Jet Needle straight diameter is 2.96mm.
This portion of the jet needle affects tuning from idle to approximately 1/4 throttle opening.

HSR42 Dealer Jet Kits (KHS-025)

Order No. **002-983**

Accelerator Pump Nozzles

TM42/11-50	Leaner	**Order No.**	**007-485**
TM42/11-60	Leaner		**007-486**
TM42/11-70	Std HSR42/45/48		**007-487**

Short Idle Screw (Optional)

Short Idle Screw (990-605-065) **Order No. 007-484**
See Item #55 in exploded view of carb.

NOTE: Do not modify the idle screw or any of its component pieces. If the screw is removed, be sure it is re-installed with the components in place as illustrated.

Choke Cable (990-662-002) **Order No. 007-208**

Air Box Adapter

Adapts HSR42, 45 to stock Harley-Davidson airbox or aftermarket airbox designed to fit stock CV carbs.

Airbox Adapter	**Order No.**	**007-450**
Screws (3 required)		**007-453**
O-Ring		**007-454**

Evolution Head Breather Kit (Optional)

1991 to present Sportsters & 1993 to present 1340 Evolutions.

Head breather bolts kit (KHS-020) **Order No. 002-984**

Mikuni Carb rebuild kit (KHS-016) **Order No. 002-989**

Air Filter Mounting bracket

(HS42/019) **Order No. 007-465**

Replacement K&N Air Filter and Chrome Covers

K&N air filter for HSR carb kits (HS42/012)	**Order No.**	**007-463**
Cover used with K&N filter (HS42/021-250)		**007-464**
3"thick Hi Flow air filter (HS42/012-300)		**007-466**
Cover used with stock airbox (HS42/006)		**007-462**

Throttle Cables

Fitment: 1970-95 Harley-Davidson Throttle

Length	Description & Mikuni No.	**Order No.**
Standard (38")	OPEN (HS42/028-A)	**007-451**
	CLOSE (HS42/029-A)	**007-452**
Dresser (47")	OPEN (KHS/039)	**007-550**
	CLOSE (KHS/040)	**007-551**

Fitment: 1996 to present Harley-Davidson

Standard (38")	OPEN (KHS/043)	**007-554**
	CLOSE (KHS/044)	**007-555**
Dresser (47")	OPEN (KHS/041)	**007-552**
	CLOSE (KHS/042)	**007-553**

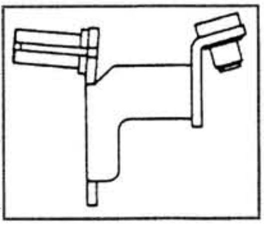
Note: Open = Throttle Close = Idle

Fitment: Buells equipped with 7/8th handle bar

Old Style HSR42/45	PUSH (01-670)	**021-934B**
	PULL (01-669)	**021-934A**
Up to "98 New Carb	PUSH/PULL (01-716)	**021-935**
'99 Old Carb	PUSH/PULL(01-715)	**021-936**
'99 New Carb	PUSH/PULL (01-714)	**021-937**

Cable Bracket (low) *Order No. 007-294*

Lowers cable for large fuel tanks. **(shown below)**



Performance Manifolds

(choose appropriate rubber flange)

Mikuni Manifold (HS42/017-45) **Order No. 007-459**

Mikuni Performance Manifold to mount HSR42, 45 on '84 to present 1340 Evolutions.

Mikuni Manifold (HS42/020-45) **Order No. 007-458**

Mikuni Performance Manifold to mount HSR42, 45 on Shovelhead Big Twin.

Rubber Flanges

HSR42 to Harley-Davidson 2 Bolt Flange (HS42/018-42)	**Order No. 007-460**
HSR45 to Harley-Davidson 2 Bolt Flange (HS42/018-45)	**Order No. 007-461**
HSR48 to Harley-Davidson 2 Bolt Flange (HS42/062-48)	**Order No. 007-467**

MIKUNI HSR42/45/48 GERNERAL TUNING PROCEDURES

Your Mikuni HSR42 is fitted with the tuning parts we found to work with a majority of engine tuning combinations. However, the tremendous number of differing exhaust systems and cams available for Harley engines make it impossible to accommodate all possible combinations with one carburetor set-up. You will probably find that the HSR42 will run perfectly on your engine without exchanging any parts. But if it doesn't, you may alter its tuning to suit your engines needs by following this guide.

There are many more replaceable parts that affect tuning in the HSR42 than in the stock Harley carburetor. With these parts you will be able to precisely tailor the HSR42 to your engines requirements throughout its rpm and throttle setting range.

Each tuning system is easy to modify and diagnose, but only when you understand what each system does and how it works. Before making any alterations to the HSR42, if any are needed at all, read the section of this manual describing the various tuning components and their functional range.

There is simply no point in attempting to tune any carburetor unless the engine is completely sound. Valves and rings must seal properly, the ignition timing must be correct and the spark plugs clean and gapped. Some exhaust systems may also make carburetor tuning difficult. For instance, it is very difficult to get smooth responsive carburetion with straight and open pipes. If you have any doubts about the condition of your engine, tune and test it before beginning what could be a frustrating and unproductive effort to fix another problem with the carburetor.

Pilot System - Tuning the Pilot Circuit

The first step in tuning this carburetor is to get the idle circuit correctly adjusted. And the first step in this procedure is to adjust the air screw for the best idle. Mikuni sets the air screw at two turns out during assembly. This is the position we have found to be right most of the time. If the screw position had been altered, gently bottom it and re-open it to two turns out from the fully closed position.

Next, ride the bike until the engine is at its normal operating temperature. This may require several miles a highway speeds. If you have an oil temperature gauge, ride until the oil temperature is at or near 150∞.

With the machine vertical and the engine idling near 1,000 rpm, adjust the air screw in slowly until the idle either slows or becomes irregular, then begin turning the screw out until the engine again slows or begins an irregular idle. Count the number of turns between the too rich and too lean positions.

Set the air screw mid-way between the too rich and too lean positions. You may further refine the air screws position with further riding experience, but this will be very close to the perfect idle mixture setting.

If you allow the engine to get too hot during the air screw adjustment procedure, the resulting adjustment will probably be on the lean side of correct. If you have a large fan, use it while adjusting the mixture. If you do not have one, you may need to take time out for a short ride to cool the engine back to normal temperature.

NOTE: If the best idle is achieved with the air screw less than 1/4 turn out, the pilot jet is too small and will need to be changed.

On the other hand, if the air screw must be more than three turns out for best idle, the pilot jet is too large and will need to be changed. Once you have a good idle with the air screw within its range, you may proceed to the next stage: Tuning the Jet Needle.

Main System - Tuning the Jet Needle (Initial straight portion)

It is unlikely that you will need to change the jet needle from the one supplied in your HSR42. However, in case you do, you should be aware of how it works and how to tell if the one you have is too large (leaner) or too small for your particular engine set up.

The initial straight portion of the jet needle affects the mixture from idle to approximately 1/4 throttle, at which point the needle's tapered portion takes over.

Lean Condition

If the jet needle is too lean (large), part throttle acceleration will be flat. There may also be some detonation during part throttle acceleration, although this can also be caused by other factors. A lean jet needle will also result in a slow warm-up.

If part throttle acceleration is flat, install a one size smaller jet needle and compare the performance. If acceleration is improved, leave the smaller jet needle in and take a fairly long ride at steady speeds to give the spark plugs time to color evenly

Take a spark plug wrench with you and after a few miles at steady speeds, stop and remove a plug for inspection. Be careful as you stop not to operate the throttle. The extra fuel from the accelerator pump can cause a false plug reading. The body of a spark plug can be from light gray to brown to dark gray. If the plug body is black and has a sooty appearance the jet needle is probably too rich and a larger one will need to be fitted.

Rich Condition

While a black sooty spark plug is a sure sign of richness, there are others that are a bit more subtle. If your engine responds crisply at low throttle when it is cold, chances are the jet needle is one size smaller than it needs to be. Assuming, of course, that the idle circuit is correctly tuned.

Poor fuel mileage is another sign of richness and because of the way most of us ride our Harleys, that richness is usually the result of a jet needle that is too small. The color of the end of the exhausts is a sign of mixture strength. Dark gray with some black is normal for today's lead free gasoline. If the exhaust color is black, chances are you can enlarge the size of the jet needle.

It may be that you prefer a jet needle that is slightly on the rich side of the correct range. A slightly over-rich condition lets a Harley accelerate better at very low rpm's and from very low throttle settings. Be aware that you will lose some fuel economy if you choose to do this.

Tuning the Jet Needle (Tapered portion)

Like the idle circuit of the jet needle, the tapered portion has its range of operation. The tapered portion has an increasing effect on fuel mixture from about 1/4 throttle opening as the tapered section leaves the opening of the needle jet. Between 1/2 and 3/4 throttle the jet needles influence is the greatest and it controls most of the fuel flow.

All jet needle and main jet testing should be done with the engine near the middle of its rpm range. Start your acceleration tests at about 50 mph. The best jet needle position will give the strongest acceleration.

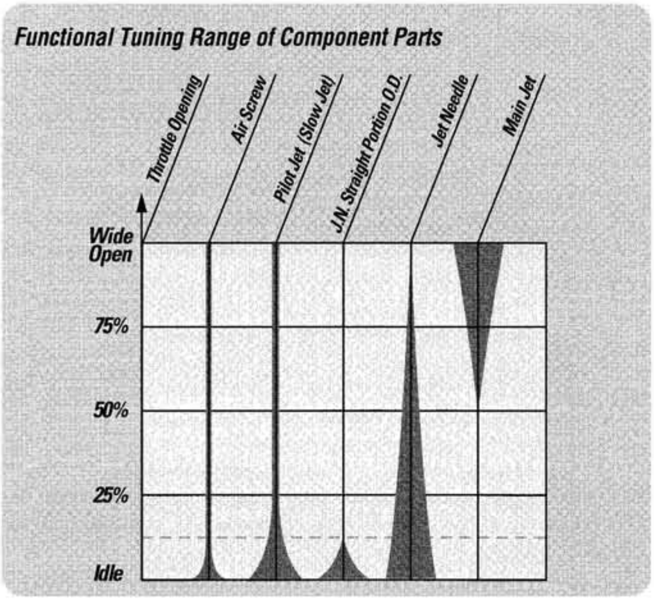
With the engine at operating temperature, accelerate at 1/2 to 3/4 throttle, in top gear from 50 mph or so. If acceleration seems soft or flat and the engine is slow to respond when the throttle is quickly opened from 1/2 to 3/4 throttle position, the mixture is too lean. Raise the jet needle one notch and repeat the test.

On the other hand, if acceleration is crisp but the engines hesitates or staggers as the throttle suddenly shut down from 3/4 to 1/2 throttle, the mixture is too rich. Lower the jet needle one notch and repeat the test.
The jet needle position will be near correct when acceleration is crisp at mid rpm yet the engine doe not load up during throttle shut down.
Tuning the Main Jet
You could in fact remove the main jet from your Mikuni HSR42 and the engine would run fine until the throttle was near the 3/4 mark. The jet needle and needle jet restrict the amount of fuel getting into the engine until about that point. There is no point in changing main jets if a mixture problem exists below the 3/4 throttle position.

The main jet is the last jet you need to deal with and is the easiest to get right. If you have the room, the most effective method for getting the main jet right is to measure the time required to accelerate between two points. The start and end markers should be spaced so that starting at about 35 mph at the first marker will have you going past the second at near 55 mph.

Set up markers that are far enough apart, on a safe road, to meet the conditions mentioned above. When you pass the first marker roll the throttle fully open and have a friend (it's easier with help) measure the time need to get to the second marker. The jet that gives the shortest time is the correct jet. This method is simple but effective.

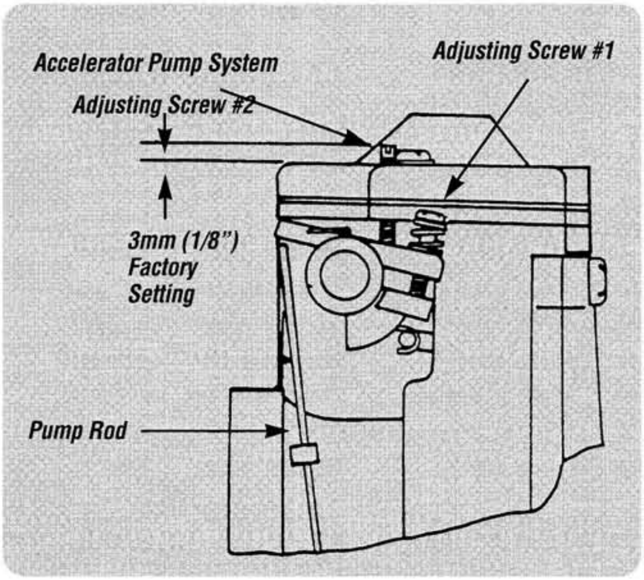
Tuning the Accelerator Pump
The beginning point of the pump stroke is adjusted with the adjusting screw #1 on the white plastic pump lever. To start the pump sooner, back the screw out. Turn the screw in to make the pump start its stroke at a larger throttle opening. Most engines perform best if the pump begins its stroke as soon as the throttle is moved from the idle position.

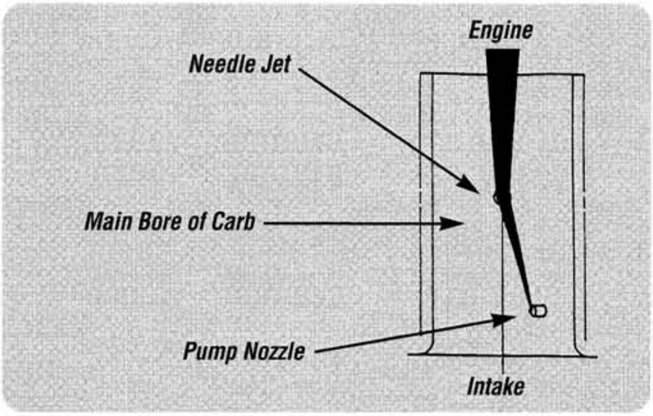

Functional Tuning Range of Component Parts

The end of the accelerator pump stroke is adjusted by the adjusting screw #2 located on the top of the carburetor just behind the pump lever. Best performance is generally achieved when the pump stroke ends before 3/4 throttle.

For best results, the accelerator pump nozzle should be pointed directly at the jet needle. The nozzle is held in place by the friction of an o-ring and can be turned easily with a pair of long nosed pliers.

Nozzle adjustment should be made with a minimum of pump strokes to avoid flooding the engine.





Servicing - HSR42/45 Carburetors

There are very few moving parts in the HSR series carburetor.

This carburetor will not require much servicing, but there are a few items to be mentioned to assure good performance season after season.

A. If the motorcycle is to be stored for any length of time the carburetor float bowl should be drained.

B. The float drain plug should be removed periodically and cleaned of any sediment that may have settled during long periods of use.

C. DO NOT drill or modify any part of this carburetor for any reason and the result will surely be more problems. Refer to this Tuning guide to correct any problems that you may have.

D. If a jet or passage does become plugged, use only carburetor cleaner and compressed air. DO NOT push a drill or any other object through the jet or passage to clean them.

E. If the air filter is dirty and requires servicing, follow the steps found on page 56 . Typical service is done after about 20,00 miles of use.

F. The fuel level in the carburetor will probably never need adjusting; however, if a problem has been diagnosed as a fuel level that is too high or too low, adjustment can be done as shown.

MIKUNI HSR42/45/48 GERNERAL

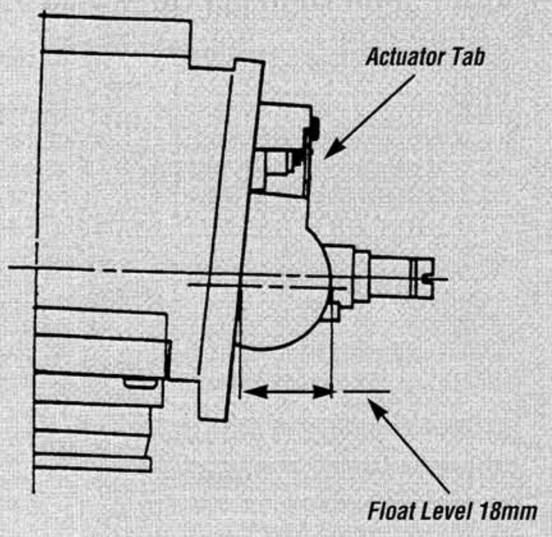
TUNING PROCEDURES

Float Level Adjustments

A. Invert the carburetor and remove the float bowl.

B. The float assembly's actuator tab should just begin contact with the Needle Valve assembly when the bottom of the float is 18mm from the carburetor bottom surface as shown.

C. If adjustment is required, adjust by bending the actuator tab.



Air Filter Service Instructions

A. Pre Cleaning: Tap the element to dislodge any large embedded dirt, then gently brush with a soft bristle brush.

B. Pan Cleaning: Soak or roll element in a large shallow pan of K&N air filter cleaner (1/4 the depth of 1 pleat). Remove immediately and let sit for approximately 10 minutes.

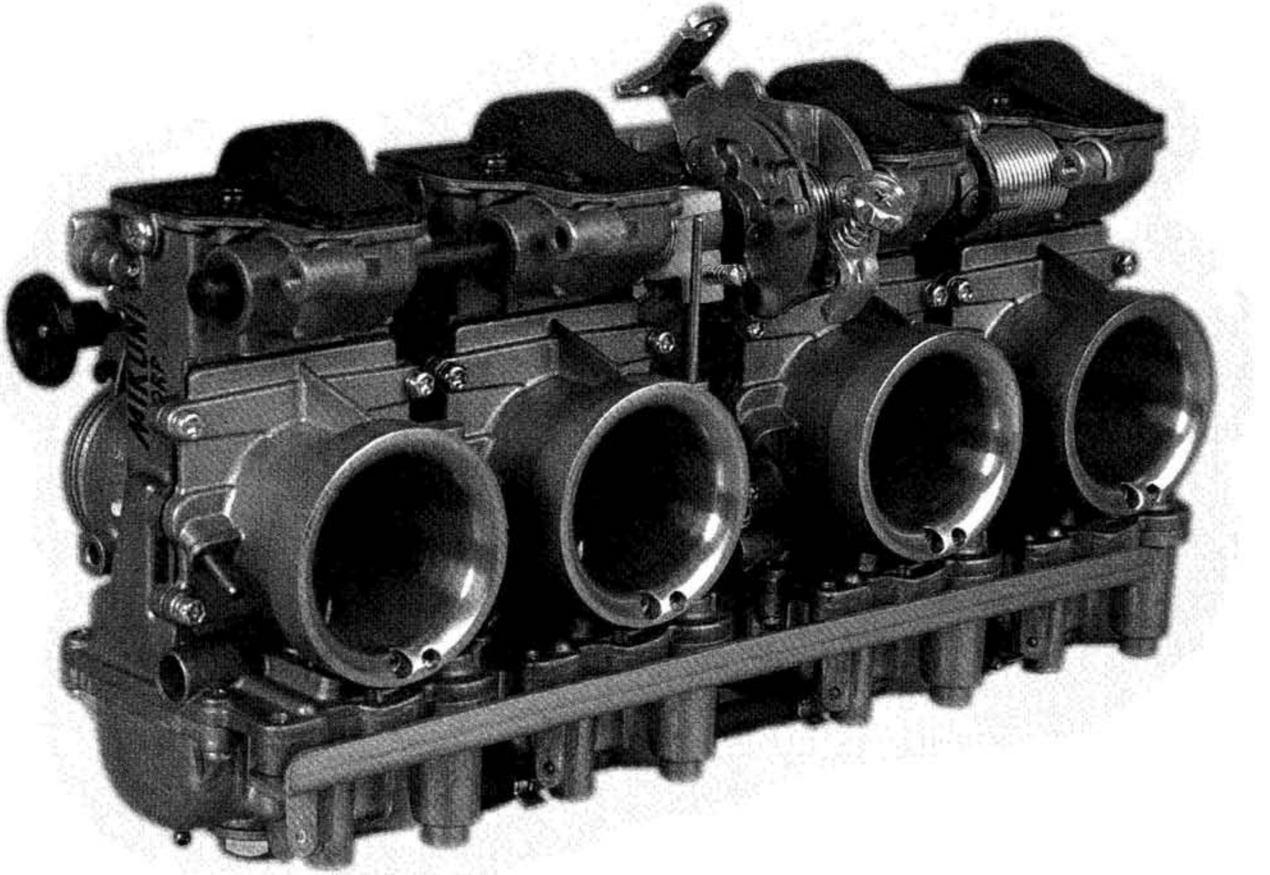
C. Rinse Off: Rinse off the element with low pressure water, tap water is OK. Always flush from the inside of the filter out. This removes the dirt and does not drive it into the filter. IMPORTANT: Air dry only.

D. Oiling: After the filter has dried always re-oil before using. Apply K&N air filter oil with one pass per pleat. Wait 10 minutes and re-oil any white spots still showing. IMPORTANT: Do not use gasoline or cleaning solvent to service the filter element as this will damage the filter.

Troubleshooting Guide

Check for:	Remedy:
Overflow	
1 Worn needle valve or dirty valve seat.	1. Replace or clean.
2. Improper fuel level in float bowl	2. Adjust level.
3. Damaged float bowl O-ring gasket.	3. Replace O-ring.
4. Loose float bowl screws.	4. Tighten screws.
5. Pressurized fuel tank.	5. Check for proper fuel tank venting.
6. Broken needle valve O-ring.	6. Replace O-ring.
Poor Idling	
1. Fuel filler cap not venting.	1. Replace filler cap.
2. Idle speed improperly adjusted.	2. Adjust idle speed.
3. Clogged bypass or outlet.	3. Clean carburetor.
4. Clogged pilot jet.	4. Clean jet.
5. Loose pilot jet.	5. Tighten Jet.
6. Air leak in system.	6. Tighten manifold or hose clamps.
7. Choke not fully closed.	7. Adjust cable.
8. Crank vent blocked.	8. Remove blockage from hose or passage.
Poor Fuel Economy	
1. Filler cap not venting.	1. Replace filler cap.
2. Fuel level too high (overflows)	2. Adjust level.
3. Loose jets.	3. Tighten jets.
4. Choke not fully closed.	4. Adjust cable.
5. Dirty air cleaner.	5. Clean or replace.
Poor Acceleration	
1. Clogged accelerator system.	1. Clean
2. Clogged Pilot jet.	2. Clean.
3. Fuel level too low.	3. Adjust level.
Hard Starting	
1. Choke not operating properly.	1. Adjust cable.
2. Generally dirty carburetor.	2. Clean.
3. Air leak in system.	3. Tighten manifold or hose clamps.
4. Excessive use of throttle before starting engine.	4. Do not open throttle before starting.
Poor Performance on the Road	
1. Fuel filler cap not venting.	1. Replace filler cap.
2. Fuel level incorrect.	2. Adjust level.
3. Main jet loose.	3. Tighten jet.
4. Air leak in system.	4. Tighten manifold or hose clamps.
5. Generally dirty carburetor.	5. Clean.
6. Dirty air filter.	6. Clean or replace.
Poor High Speed Performance	
1. Fuel filler cap not venting.	1. Replace filler cap.
2. Loose main jet.	2. Tighten jet.
3. Incorrect fuel level.	3. Adjust level.
4. Strainer in fuel tank dirty.	4. Clean.
5. Clogged main jet	5. Clean

MIKUNI RS SMOOTHBORE CARB



The Mikuni RS Series Carburetors were designed and built in response to the needs of the world's top motorcycle road race and drag race teams. They required carburetors which would satisfy the precise fuel metering demands and high flow volume required by highly modified race engines. And yet, also provide the smooth, controllable throttle response that is needed by any rider pushing his motorcycle to its limits on the race track and under any high performance applications. The carburetors need to meter fuel correctly under a wide range of atmospheric conditions and engine tuning modifications while being easily accessible for trackside tuning changes which need to be made quickly.

Designed for in-line four cylinder performance motorcycle applications, the Mikuni RS Series Radial Flat Slide Carburetors offer superior horsepower gains with their maximum flowing smoothbore induction tract and radial flat slide design. An adjustable accelerator pump system helps to provide instant throttle response, particularly in the lower RPM range. The RS Series Carburetors feature a compact design which is 25% lighter than other performance carburetors, offers quick needle jet adjustment, and uses readily available standard Mikuni jets.

1. Accelerator Pump Adjust Screw
Sets ON and OFF operation of accelerator pump in relation to throttle slide position.

2. Throttle Return Spring.
A choice of positioning pegs allows adjustment of spring tension.

3. Idle Adjustment Screw
Controls engine idle speed.

4. Adjustable Accelerator Pump
Squirts fuel into carburetor venturi when throttle is opened to improve engine response.

5. Starter System
Provides fuel enrichment for cold engine starting.

6. Accelerator Pump Spray Nozzle
Shoots fuel directly into the intake tract for immediate engine response.

7. Jet Needle Clip
Has easy adjustment feature for quick tuning.

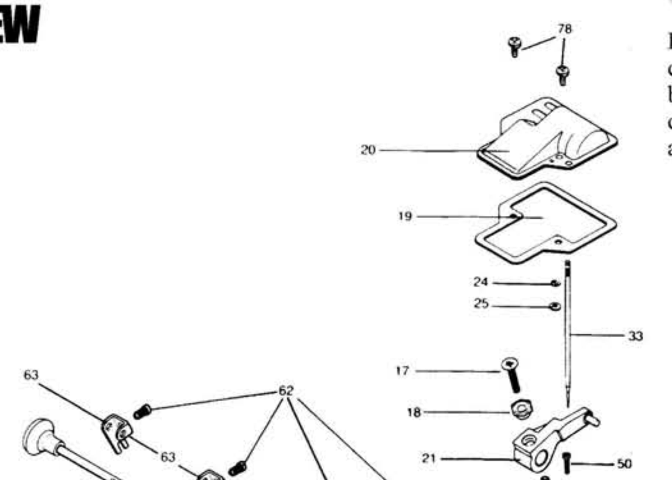
8. Flat Throttle Valve Design
Provides the strongest signal for precise and instantaneous throttle response.

9. Float Bowl Vent
Allows atmospheric pressure into float bowl for fuel flow.

10. Smooth Bore Venturi
Produces the optimum air and fuel mixture flow at all RPMs.

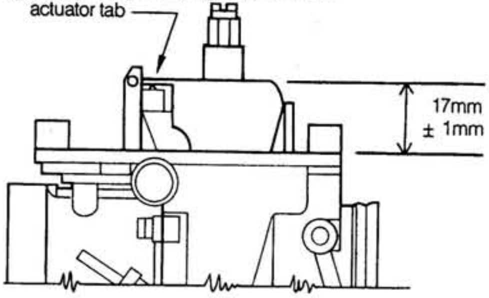
11. Pilot Air Jet
Use in conjunction with the Pilot Fuel Screw for tuning of mixture at idle to 1/4 throttle.

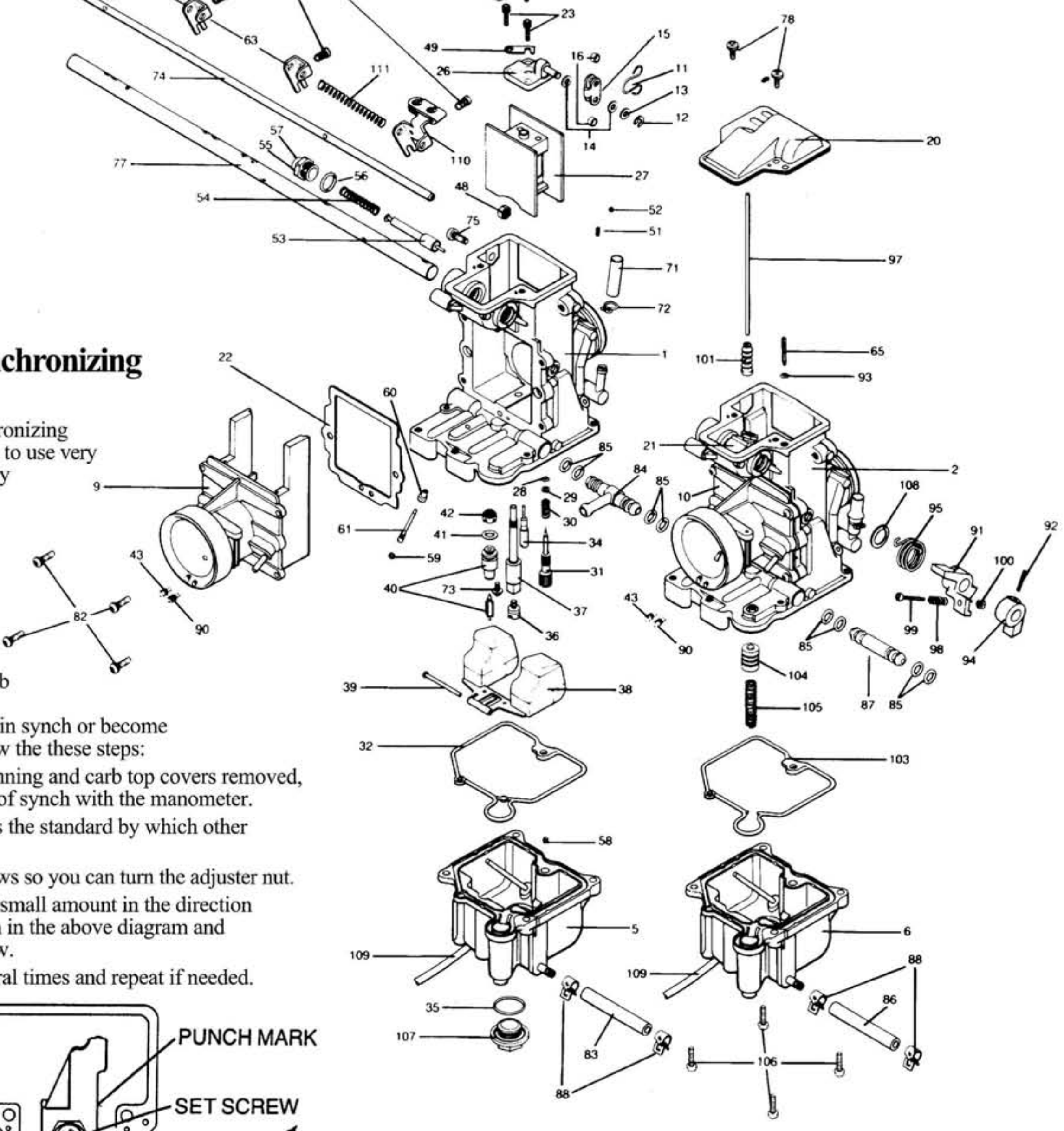
MIKUNI RS SMOOTHBORE CARB PARTS & EXPLODED VIEW


78
20
19
24
25
33
17
18
63
62
21
50

Float Level Adjustments

Invert carburetors and remove float bowls. Float Assembly's actuator tab should just begin contact with Needle Valve Assembly when bottom of Float Assembly is 17mm from carburetor bottom as shown. Make required adjustments by bending actuator tab.


actuator tab
17mm
± 1mm


23
63
63
49
16
15
11
13
12
14
26
74
111
110
57
55
56
77
54
48
27
52
51
75
53
71
72
1
78
20
97
22
60
9
101
65
93
21
85
84
85
2
28
29
30
10
42
41
34
31
61
59
40
73
37
36
108
95
91
92
100
43
90
82
43
90
99
98
94
85
104
105
87
85
39
38
32
103
58
5
6
109
109
88
86
35
107
83
106
88

Carburetor Synchronizing (Balancing)

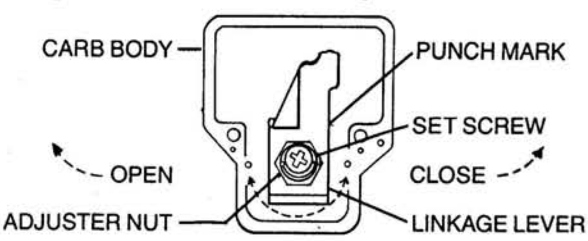
1. The Mikuni Synchronizing System is designed to use very few parts and be easy to adjust.
2. Use a manometer or similar device connected to the fittings on the carbs near the intake manifolds. You are then able to check proper carb synchronization.
   If the carbs are not in synch or become mis-adjusted, follow the these steps:

a. With the engine running and carb top covers removed, locate the carb out of synch with the manometer.
   (Note: Carb No.3 is the standard by which other carbs are set.

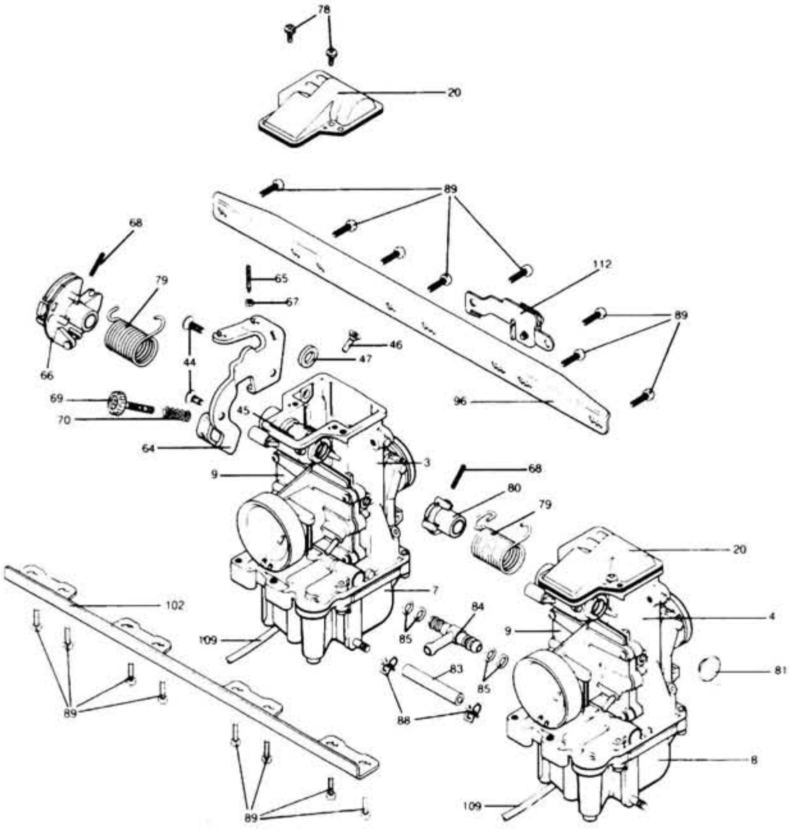
b. Loosen the set screws so you can turn the adjuster nut.

c. Turn the adjuster a small amount in the direction necessary as shown in the above diagram and tighten the set screw.

d. Snap the throttle several times and repeat if needed.


CARB BODY
PUNCH MARK
SET SCREW
OPEN
CLOSE
ADJUSTER NUT
LINKAGE LEVER

No.	Description	Part No.	Order No.
1	**Mixing Body**	N/A	
2	**Mixing Body**	N/A	
3	**Mixing Body**	N/A	
4	**Mixing Body**	N/A	
5	**Float Chamber Body**	N/A	
6	**Float Chamber Body**	N/A	
7	**Float Chamber Body**	N/A	
8	**Float Chamber Body**	N/A	
9	**Funnel**	N/A	
10	**Funnel**	N/A	
11	**Clip, T.V. Lever**	N/A	
12	**E-Ring, T.V. Lever**	N/A	
13	**Washer, T.V. Lever**	N/A	
14	**Packing, T.V. Lever**	N/A	
15	**Plate, T.V. Lever**	N/A	
16	**Ring, T.V. Lever**	N/A	
17	**Screw, Sync. Lock**	C5=0518	**007-117**
18	**Ring, Sync. Adjust**	TM36/06	**007-118**
19	**Gasket, Top Cover**	TM36/3	**007-119**
20	**Top Cover, Carb**	N/A	
21	**Lever assembly, T.V. #1 #2**	N/A	
22	**Gasket, A/Funnel**	N/A	
23	**Screw, 2.5mm Allen**	739-13001	**007-123**
24A	**E-Ring, RS34-36**	VM20-269	**002-083**
24B	**E-Ring, RS38-40**	BS32/126	**002-455**
25A	**Washer, Needle Clip 34-36**	VM26/315	**007-124**
25B	**Washer, Needle Clip 38-40**	826-03002	
26	**Connector Plate, T.V.**	N/A	
27A	**Valve, Throttle 34-36**		
27B	**Valve, Throttle 38-40**		
	(Throttle Valves are 2.0 Cutaway)		
28	**O-Ring, Fuel Screw**	N133.037	**002-858**
29	**Washer, Fuel Screw**	VM12/33	**002-856**
30	**Spring, Fuel Screw**	N133.206	**007-137**
31	**Screw, Pilot Fuel**	604-26003	**007-138**
32	**O-Ring, F.C.B. #1-3-4**	616-94020	**007-140**
33	**Jet Needle**	9 Series	**see chart pg.70**
34	**Pilot Jet**	VM28/486	**see chart pg. 59**
35	**O-Ring, Drain Plug**	VM28/254	**002-531**
36	**Main Jet**	N100.604	**see chart pg. 58**
37	**Needle Jet**	#568	**see chart pg. 61**
38	**Float assembly**	859-32011	**007-141**
39	**Pin Float**	VM30/160	**002-605**



No.	Description	Part No.	Order No.
40	**Needle Valve assembly**	N149.040	**see chart pg. 57**
41	**O-Ring, Needle Valve**	KV/10	**002-709**
42	**Filter, Needle Valve**	VM18/233	**002-606**
43	**Main Air Jet (Plugged)**	BS30/97	
44	**Screw, Crank Bracket**	C5=0512	**007-150**
45	**Lever assembly, T.V. #3**	N/A	
46	**Screw, Lever Lock**	N/A	
47	**Packing, Shaft**	N/A	
48	**Hexagon, Locknut**	N/A	
49	**Plate, Needle Retainer**	N/A	
50	**Screw, T.V. Plate**	N/A	
51	**Spring, Starter Shaft**	B21/29	**007-155**
52	**Ball Starter Shaft**	B21/28	**007-156**
53	**Plunger, Starter**	N/A	
54	**Spring, Starter**	VM16/42	**002-671**
55	**Guide Holder, Starter**	N/A	
56	**O-Ring, Starter**	N138.198	**007-160**
57	**Cap, Starter**	N/A	
58	**Starter Jet**	VM17/1002	**see chart pg. 57**
59	**O-Ring, A/P Nozzle**	N124-063	**007-163**
60	**Plug, A/P Nozzle**	TM29/14	**007-164**
61	**Pump, Nozzle**	TM36/43	**007-165**
62	**Screw, Start Bracket**	N158.052	**002-659**
63	**Lever, Starter Shaft**	N/A	
64	**Bracket, Bell Crank**	N/A	
65	**Adjust Screw, A/P**	TM36/48A	**007-168**
66	**Lever assembly, Bell Crank**	N/A	
67	**Hex Nut, A/P**	N/A	
68	**Pin, Bell Crank**	N138.019	**007-171**
69	**Adjuster, Idle**	N/A	
70	**Spring, Idle Adjuster**	N110.209	**002-655**
71	**Cap, Vacuum Fitting**	N148.013	**002-646**
72	**Spring Clip, Vac. Fit.**	N/A	
73	**Screw, NV Holder**	VM13/216	**007-174**
74	**Shaft assembly, Starter**	N/A	
75	**Pan Head Screw**	C2-0508-B	**002-648**
76	**Flat Head Screw**	N/A	
77A	**Shaft, Throttle B/C #3**	700-17011	**002-904**
77B	**Shaft, Throttle B/C #1**	700-17012	**002-905**
	(Racing use only, Left side bell crank)		
77C	**Shaft Throttle B/C #3**	700-17013	**002-906**
78	**Screw, Top Cover**	CW2=0408	**007-175**
79	**Spring, Throttle Return.**	TM36/46A	**007-204**
80	**Lever, Return. Spring**	N/A	
81	**Cap, Shaft End**	N/A	
82	**Screw, Air Funnel**	N/A	
83	**Hose, Fuel Connect**	888-44003	**007-180**
84	**Inlet Fuel "T"**	N/A	
85	**O-Ring, Fuel Joint**	616-23002	**007-182**
86	**Hose, A/P Fuel**	N/A	
87	**Joint, Fuel**	792-20014	**007-184**
87A	**Joint, Fuel**	792-20013	**007-183**
	(For RS36-D3, RS38-D19, RS40-D1)		
88	**Clip, Fuel Hose**	E100729-BB	**007-185**
89	**Screw, Bracket**	C2=0512-B	**002-628**
90	**Pilot Air Jet**	BS30/97	**see chart pg. 59**
91	**Lever, A/Pump**	TM36/17	
92	**Pin, A/P Locate**	N/A	
93	**O-Ring, A/P Adj.**	B30-205	**007-188**
94	**Lever, A/Pump**	TM36/18	
95	**Spring, A/Pump**	TM36/45	
96	**Plate, Top Bracket**	N/A	
97	**Rod, A/Pump**	TM36/44	**007-192**
98	**Spring, A/P Adj.**	M12F/46A	**002-181**
99	**Screw, A/P Adj.**	MC-0316-B	**007-193**
100	**Hexagon Nut, A/P Adj.**	N3=03-B	**007-194**
101	**Cap, A/P Rubber**	TM36/64	**007-195**
102	**Plate, Lower Bracket**	N/A	
103	**O-Ring, F.C.B. A/P**	616-90421	**007-197**
104	**Plunger, A/Pump 12mm**	TM36/60	**007-198**
105	**Spring, A/P 12mm**	VM14SC13/89	**007-200**
106	**Screw, Float Bowl**	C2=0412-B	**007-201**
107	**Plug, Drain**	VM33/77	**002-603**
108	**Ring, A/P Spring**	N/A	
109	**Hose**	N/A	
110	**Lever, Starter Cable**	TM36/63	**007-205**
111	**Spring, Bracket**	730-06027	**007-206**
112	**Bracket, Cable**	TM36/61	**007-207**

MIKUNI RS SMOOTHBORE CARB ACCESSORIES

Mikuni RS Carburetor Series

Please check the RS Series Application Chart for the particular kit you need. Carburetors are available in 34, 36, 38 and 40 mm bore sizes with different carb spacing for particular bike applications and with different jetting to match engine modifications.

Order No.	Application	Mikuni Kit No.
001-319	GSX-600 88 GSX-R750 86-87 Suzuki GS 750 ALL Kawasaki KZ750 ALL	RS34-D21-K
001-321	Kawasaki Ninja 900 ALL Kawasaki Ninja 1000 86-87 Yamaha FJ1100 ALL Yamaha FJ1200 ALL	RS36-D8-K
001-320	GSX-600 88 GSX-R750 88-92 GSX-R1100 87-92 GS1000-1150 KZ1000-1100	RS36-D3-K
001-326	Ninja 900 Ninja 1000 FJ1100-1200	RS38-D35-K

Order No.	Application	Mikuni Kit No.
001-325	GSX-R750 88-92 GSX-R1100 87-92 GS1000-1150 KZ1000-1100	RS38-D19-K
001-331	Ninja, FJ Race	RS40-D12-K
001-330	GSX-R, GS, KZ Race (aircooled)	RS40-D1-K

Left Side Bell Crank RS Series

Order No.	Application	Mikuni Kit No.
001-322	GSX-R, GS, KZ Race (Racing Only)	RS36-D9-K
001-327		RS38-D29-K
001-332		RS40-D7-K

Note: These are guidelines only, other applications may be available. Specifications are subject to change. Only for racing vehicles which may NEVER be used upon a highway.

Standard Tuning Specifications

Mikuni Kit Number	Application *(General)	Carb Spacing (Throttle Shaft No.) A-B-C	Spigot (O.D.) MM	Main Jet (n100.604)	Jet Needle (J8-) (Clip Pos.,)	Needle Jet Jet #568 (784-13002)	Pilot Jet VM28/486	Screw (Turns)
RS34-D31-K (N/A)	YAM FZ 600 ALL	70-80-70 (700-17013)	36	115	9DZH1/9DZH05 (-3)	P-4	17.5	1/4-1/2
RS34-D21-K	GSX-600 88 GSX-R750 86-87 SUZ GS750 ALL KAW KZ 750 ALL Z1-KZ1000***	77-93-77 (700-17011)	40	115 115 115 115 115	9DZH1/9DZH05 (-3)	P-4	17.5	1/4-1/2
RS36-D3-K ** **RS36-D9-K**	GSX-600 88 GSX-R 750 88-92 GSX-R1100 87-92, GS1000-1500 KZ 1000***-1100	77-93-77 (700-17011)	42	120 120 130 130	9DZH1/9DZH05 (-3)	P-4	17.5	1/4-1/2
RS38-D35-K	NINJA 900 NINJA 1000 FJ1100-1200 (Requires throttle & cables)	77-85-77 (700-17011)	42 42	135 135	9CHY3/9CHY10 (-2) 135	Y-6	17.5	1/4-1/2
RS38-D19-K ** **RS38-D29-K**	GSX-R 750 87-92 GSX-R1100 87-92, GS 1000-1500 KZ 1000***-1100	77-93-77 (700-17011)	42	135 135 135	9CHY3/9CHY10 (-2)	Y-6	17.5	1/4-1/2
RS40-D12-K	NINJA, FJ RACE	77-85-77	44	140	9CHY3/9CHY10	Y-6	17.5	1/4-1/2
RS40-D1-K ** **RS40-D7-K**	GSX-R, GS, KZ RACE (air-cooled)	77-93-77 (700-17011)	44	140	9CHY3/9CHY10 (-3)	Y-6	17.5	1/4-1/2

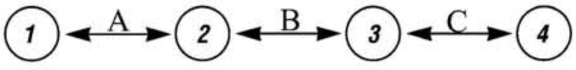
Kit prefix number denotes carb venturi size in millimeters, e.g.: RS36 = 36mm bore.

** Uses left side throttle linkage

* These are guidelines only. Other applications may be available. Contact Sudco. Specifications are subject to change.

* RS34/36 may use jet needle 9DZH05. RS38/40 may use 9CHY10

Carburetor Spacing (mm):



Note: Pre J Models need a mounting flange: Order No. **005-818**
(4 per engine)

Item 33 Jet Needles

RS32 - 34 - 36

LEAN	9DZH01 (standard)	**007-035**
	9DZH03	**007-037**
RICH	9DZH04	**007-038**

RS38 - 40

LEAN	9CHY03 (standard)	**007-020**
	9CHY05	**007-022**
RICH	9CHY06	**007-023**

Item 34 Pilot Jet (See Mikuni Jet table to order)

VM28/486

SIZES #15 - #50 in increments of 5.

#12.5, #15, #17.5, #20, #22.5, #25, #27.5, #30, #35, #40, #45, #50.

Item 36 Main Jets (See Mikuni Jet table)

N100/604

SIZES #50 - #250 in increments of 2.5.

(e.g. #50, #52.5, #55, #57.5, etc.)

Item 37 Needle Jet #568

LEAN	**Y-0**	**003-663**	**LEAN**	**0-6**	**003-650**
	Y-2	**003-664**		**0-8**	**003-651**
	Y-4	**003-665**		**P-0**	**003-652**
	Y-6	**003-666**		**P-2**	**003-653**
	Y-8	**003-667**		**P-4**	**003-654**
	Z-0	**003-668**		**P-6**	**003-655**
	Z-2	**003-669**	**RICH**	**P-8**	**003-656**
	Z-4	**003-670**			
RICH	**Z-6**	**003-671**			

Item 40 Needle Valve Assembly

N149.040	**2.0**	**007-143**
N149.040	**2.5**	**007-144**
N149.040	**2.8 (standard)**	**007-145**

Item 58 Starter Jet

VM17/1002

#15	**004-400**
#60	**004-410**

RS Series Air Filter

K&N RC-0981	**005-121 (each)**

Mikuni Methanol Conversion Kit

MIKUNI
GENUINE COMPONENTS

The Mikuni Methanol Kit includes all the necessary components, such as main jets, jet needles, needle jets, o-rings, needle valves, etc. to convert your RS38 or RS40 to methanol.

KRS-005 for RS38 and RS40 002-990

Velocity Stacks

Velocity stacks improve the air flow into the carburetors to increase induction efficiency and increase horsepower on racing engines where air filters are not required. Set of 4 velocity stacks fits all Mikuni RS Series Carburetors and other carburetors with 55mm O.D. intake bells. Choose length depending on chassis clearance and desired tuning characteristics (short length—broad high RPM power; medium length—mid RPM power; long length—low RPM POWER).

15mm Mikuni Velocity Stacks	**005-253**
30mm Mikuni Velocity Stacks	**005-250**
50mm Mikuni Velocity Stacks	**005-251**
70mm Mikuni Velocity Stacks	**005-252**

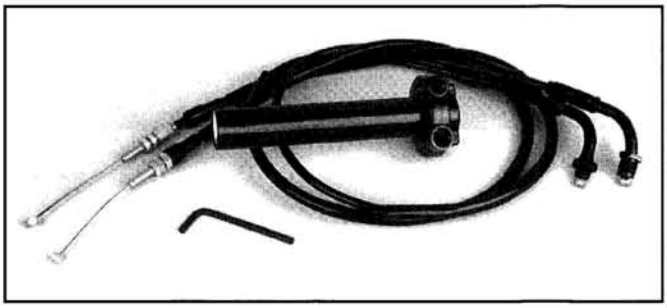
Push/Pull Throttle Assembly

A push/pull throttle assembly is required with the use of all Mikuni Racing Carburetors to assure the positive closing of the carburetor throttle slides against the high vacuum pressures encountered in racing engines. The Mikuni Push/Pull Throttle Assembly includes a twist throttle assembly and both throttle cables with adjusters.

Push/Pull Throttle Assembly (complete)	**005-230**

Replacements for Push/Pull Throttle Assembly:

Throttle Cable - push only	**005-230B**
Throttle Cable - pull only	**005-230A**
Throttle Only	**005-230C**



MIKUNI MAIN JETS

Large Hex - 4/042

Type	Sizes
Large Hex -fits needle jets 159, 166, 176, 183, 188, 192, 193, 205, 211, 224	#50-#200 in increments of 5. (e.g. 200, 210, 220, etc.)

Order No.	Size	Order No.	Size	Orde No.	Size
004-070	#50	004-095	#175	004-125	#400
004-071	#55	004-100	#180	004-126	#410
004-072	#60	004-101	#185	004-127	#420
004-073	#65	004-102	#190	004-128	#430
004-074	#70	004-103	#195	004-129	#440
004-075	#75	004-104	#200	004-130	#450
004-076	#80	004-105	#210	004-131	#460
004-077	#85	004-106	#220	004-132	#470
004-078	#90	004-107	#230	004-133	#480
004-079	#95	004-108	#240	004-134	#490
004-080	#100	004-109	#250	004-135	#500
004-081	#105	004-110	#260	004-139	#540
004-082	#110	004-111	#270	004-141	#560
004-083	#115	004-112	#280	004-143	#580
004-084	#120	004-113	#290	004-145	#600
004-085	#125	004-115	#300	004-146	#620
004-086	#130	004-116	#310	004-147	#640
004-087	#135	004-117	#320	004-149	#660
004-088	#140	004-118	#330	004-150	#680
004-089	#145	004-119	#340	004-151	#700
004-090	#150	004-120	#350	004-153	#720
004-091	#155	004-121	#360		
004-092	#160	004-122	#370		
004-093	#165	004-123	#380		
004-094	#170	004-124	#390		

Small Hex - M10/14

Type	Sizes
Small Hex -fits needle jets	#50-#200 increments of 5.

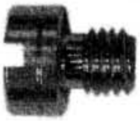
Order No.	Size	Order No.	Size	Order No.	Size
004-224	#50	004-235	#105	004-246	#160
004-225	#55	004-236	#110	004-247	#165
004-226	#60	004-237	#115	004-248	#170
004-227	#65	004-238	#120	004-249	#175
004-228	#70	004-239	#125	004-250	#180
004-229	#75	004-240	#130	004-251	#185
004-230	#80	004-241	#135	004-252	#190
004-231	#85	004-242	#140	004-253	#195
004-232	#90	004-243	#145	004-254	#200
004-233	#95	004-244	#150		
004-234	#100	004-245	#155		

Press in Type - N208.099

Type	Sizes
Press In late model Ducati CV Yamaha CV & YZF750	110 to 175 increments of 2.5 (e.g. 110, 112.5, 115)

Order No.	Size	004-710	#135	004-719	#157.5
004-700	#110	004-711	#137.5	004-720	#160
004-701	#112.5	004-712	#140	004-721	#162.5
004-702	#115	004-713	#142.5	004-722	#165
004-703	#117.5	004-714	#145	004-723	#167.5
004-704	#120	004-715	#147.5	004-724	#170
004-706	#125	004-716	#150	004-725	#172.5
004-707	#127.5	004-717	#152.5	004-726	#175
004-708	#130	004-718	#155		
004-709	#132.5				

Large Round - N100.604



Type	Sizes
Large Round -fits needle jet 171, 188, 196	#50-#240 increments of 2.5 (e.g. 50, 52.5, 55, 57.5, etc.)

Order No.	Size	004-182	#105	004-205	#162.5
004-160	#50	004-183	#107.5	004-206	#165
004-161	#52.5	004-184	#110	004-207	#167.5
004-162	#55	004-185	#112.5	004-208	#170
004-163	#57.5	004-186	#115	004-209	#172.5
004-164	#60	004-187	#117.5	004-210	#175
004-165	#62.5	004-188	#120	004-211	#177.5
004-166	#65	004-189	#122.5	004-212	#180
004-167	#67.5	004-190	#125	004-213	#182.5
004-168	#70	004-191	#127.5	004-214	#185
004-169	#72.5	004-192	#130	004-215	#187.5
004-170	#75	004-193	#132.5	004-216	#190
004-171	#77.5	004-194	#135	004-217	#192.5
004-172	#80	004-195	#137.5	004-218	#195
004-173	#82.5	004-196	#140	004-220	#200
004-174	#85	004-197	#142.5	004-221	#202.5
004-175	#87.5	004-198	#145	004-222	#205
004-176	#90	004-199	#147.5	004-223	#210
004-177	#92.5	004-200	#150	004-350	#220
004-178	#95	004-201	#152.5	004-351	#230
004-179	#97.5	004-202	#155	004-352	#240
004-180	#100	004-203	#157.5		
004-181	#102.5	004-204	#160		

Small Round - N102/221

Type	Sizes
Small Round -fits needle jets Same as large round type	#50-#200 in increments of 2.5

Order No.	Size	004-285	#100	004-306	#152.5
004-255	#50	004-286	#102.5	004-307	#155
004-256	#52.5	004-287	#105	004-308	#157.5
004-267	#55	004-288	#107.5	004-309	#160
004-268	#57.5	004-289	#110	004-310	#162.5
004-269	#60	004-290	#112.5	004-311	#165
004-270	#62.5	004-291	#115	004-312	#167.5
004-271	#65	004-292	#117.5	004-313	#170
004-272	#67.5	004-293	#120	004-314	#172.5
004-273	#70	004-294	#122.5	004-315	#175
004-274	#72.5	004-295	#125	004-316	#177.5
004-275	#75	004-296	#127.5	004-317	#180
004-276	#77.5	004-297	#130	004-318	#182.5
004-277	#80	004-298	#132.5	004-319	#185
004-278	#82.5	004-299	#135	004-320	#187.5
004-279	#85	004-300	#137.5	004-321	#190
004-280	#87.5	004-301	#140	004-322	#192.5
004-281	#90	004-302	#142.5	004-323	#195
004-282	#92.5	004-303	#145	004-324	#197.5
004-283	#95	004-304	#147.5	004-325	#200
004-284	#97.5	004-305	#150		

Round - VM11/22

Type	Sizes
Round -fits needle jets	#50-#145-increments of 2.5 thur #90 by 5 from #90 to #145

Order No.	Size	Order No.	Size	Order No.	Size
004-744	#60	004-753	#82.5	004-762	#120
004-748	#70	004-754	#85	004-763	#125
004-749	#72.5	004-755	#87.5	004-765	#135
004-751	#77.2	004-756	#90	004-767	#145
004-752	#80	004-758	#100		

Pilot Jets - VM22/210

Sizes
#10-#95 - Increments
of 2.5 thru #40.
By "5" from #40 to #95

Application
Most Mikuni carbs

Order No.	Size	004-593	#32.5	004-017	#75
004-000	#10	004-009	#35	004-018	#80
004-001	#12.5	004-594	#37.5	004-067	#85
004-002	#15	004-010	#40	004-068	#90
004-003	#17.5	004-011	#45	004-069	#95
004-004	#20	004-012	#50	004-590	#100
004-005	#22.5	004-013	#55	004-591	#110
004-006	#25	004-014	#60	004-592	#120
004-007	#27.5	004-015	#65		
004-008	#30	004-016	#70		

VM28/213

#15-#40 - Increments
of 2.5 (6 holes)

Z-1 1972
Mikuni carb

Order No.	Size	004-021	#20	004-024	#30
004-019	#15	004-022	#22.5	004-025	#35
004-020	#17.5	004-023	#25	004-026	#40

VM28/486

#12.5 - #65 - Increments
of 2.5 (8 holes)

1973-78 Z-1, GS750,
RS36mm, RS38mm
TM33

Order No.	Size	004-033	#27.5	004-052	#47.5
004-027	#12.5	004-034	#30	004-038	#50
004-028	#15	004-035	#35	004-560	#55
004-029	#17.5	004-555	#37.5	004-561	#60
004-030	#20	004-036	#40	004-562	#65
004-031	#22.5	004-051	#42.5		
004-032	#25	004-037	#45		

M28/1001

#15-#65 in
increments of 2.5

22 Flange (1000cc,
2 cycle, Banshee, RZ
Blaster, YSR50)

Order No.	Size	Order No.	Size	Order No.	Size
004-039	#15	004-596	#27.5	004-045	#45
004-050	#17.5	004-042	#30	004-046	#50
004-040	#20	004-597	#32.5	004-047	#55
004-595	#22.5	004-043	#35	004-048	#60
004-041	#25	004-044	#40	004-049	#65

BS30/96

#30-#60 in
increments of 2.5

OEM CV Carb

Order No.	Size	004-058	#40	004-063	#52.5
004-054	#30	004-059	#42.5	004-064	#55
004-055	#32.5	004-060	#45	004-065	#57.5
004-056	#35	004-061	#47.5	004-066	#60
004-057	#37.5	004-062	#50		

OEM/ N151.067

#30-#60 in
increments of 2.5
Suzuki and Triumph

OEM CV Carbs
Late model

Order No.	Size	004-609	#40	004-614	#52.5
004-605	#30	004-610	#42.5	004-615	#55
004-606	#32.5	004-611	#45	004-616	#57.5
004-607	#35	004-612	#47.5	004-617	#60
004-608	#37.5	004-613	#50		

TMX36 / N224.103

#10 - #40 in
increments of 2.5
#40 - #70 in increments of 5

OEM TMX36
on '95-later Yamaha YZ125's
Honda CR125 '00
OEM BDSR-Suzuki
TTR125/Raptor/R1/CR250 '01

Order No.	Size	004-566	#25	004-573	#45
004-580	#10	004-567	#27.5	004-574	#50
004-581	#12.5	004-568	#30	004-575	#55
004-582	#15	004-569	#32.5	004-576	#60
004-583	#17.5	004-570	#35	004-577	#65
004-564	#20	004-571	#37.5	004-578	#70
004-565	#22.5	004-572	#40		

Air Jets

Meters the air flow through the passage to and into the needle jet. It acts as a fine tuning component in regulating the fuel-air mixture. This is especially important when a bleed type needle jet is used.

Mikuni No.	Application
BS30/97	26 thru 44mm Spigot

Order No.	Size	Order No.	Size
002-150	#0.5	002-158	#1.3
002-151	#0.6	002-159	#1.4
002-152	#0.7	002-160	#1.5
002-153	#0.8	002-161	#1.6
002-154	#0.9	002-162	#1.7
002-155	#1.0	002-163	#1.8
002-156	#1.1	002-164	#1.9
002-157	#1.2	002-165	#2.0

Pilot Air Jet and Main Air Jet OEM Suzuki carbs.

Mikuni No.	Application
B42/55	OEM CV

Order No.	Size	Order No.	Size
004-640	#70	004-660	#170
004-642	#80	004-661	#175
004-644	#90	004-662	#180
004-646	#100	004-663	#185
004-647	#105	004-664	#190
004-648	#110	004-665	#195
004-649	#115	004-666	#200
004-650	#120	004-668	#210
004-651	#125	004-670	#220
004-652	#130	004-672	#230
004-653	#135	004-674	#240
004-654	#140	004-676	#250
004-655	#145	004-678	#260
004-656	#150	004-680	#270
004-657	#155	004-682	#280
004-658	#160	004-684	#290
004-659	#165	004-686	#300

Starter Jet - VM17/1002

(Fits TM32 thru 38)

Order No.	Size	004-410	#60
004-400	#15	004-414	#80
004-402	#20	004-418	#100
004-406	#40		

MIKUNI NEEDLE JETS

Needle Jets

Sizes	Series ⟶	159	166	169	171	172	175	176
Lean	N-0			003-249	003-271			003-324
	N-2			003-250	003-272			003-325
	N-4	003-200		003-251	003-273			003-326
	N-6	003-201		003-252	003-274			003-327
	N-8	003-202		003-253	003-275			003-328
	O-0	003-203	003-227	003-254	003-276			003-329
	O-2	003-204	003-228	003-255	002-277			003-330
	O-4	003-205	003-229	003-256	002-078			003-331
	O-5	003-543	003-545	003-257				
	O-6	003-206	003-230	003-258	003-279	003-295	003-307	003-333
	O-8	003-207	003-231	003-259	003-280	003-296	003-308	003-334
	P-0	003-208	003-232	003-260	003-281		003-309	003-335
	P-2	003-209	003-233	003-261	003-282		003-310	003-336
	P-4	003-210	003-234	003-262	003-283		003-311	003-337
	P-5	003-211	003-235	003-263			003-312	003-338
	P-6	003-212	003-236	003-264	003-284		003-313	003-339
	P-8	003-213	003-237	003-265	003-285		003-314	003-340
	Q-0	003-214	003-238	003-266	003-286			
	Q-2	003-215	003-239	003-267	003-287			003-342
	Q-4	003-216	003-240	003-268	003-288			003-343
	Q-5	003-217	003-546					
	Q-6	003-218	003-241	003-269	003-289			003-344
	Q-8	003-219	003-242	003-270	003-290			003-345
	R-0	003-220	003-243		003-291			
	R-2	003-221	003-244					
	R-3							
	R-4	003-223	003-245					
	R-5	003-224	003-246					003-349
▼	R-6	003-225	003-247					
Rich	R-8	003-226	003-248					

Sizes	Series ⟶	182	183	188	192	193	196	235
Lean	N-0	003-352	003-372			003-424		
	N-2		003-373			003-425		
	N-4	003-354	003-374					
	N-6	003-355	003-375					
	N-8	003-356	003-376		003-411			
	O-0	003-357	003-377				003-439	
	O-2	003-358	003-378	003-394	003-413		003-440	
	O-3							
	O-4		003-379	003-395			003-441	
	O-5						003-442	
	O-6	003-360	003-381			003-432	003-443	
	O-8	003-361	003-382	003-398		003-433	003-444	
	P-0	003-362	003-383	003-399	003-419	003-434		
	P-2	003-363	003-384		003-420	003-435		
	P-4		003-385		003-421	003-436		
	P-6	003-365	003-386		003-422	003-437		
	P-8	003-366	003-387	003-404	003-423	003-438	003-450	
	Q-0	003-367	003-388				003-451	
	Q-2	003-368	003-389				003-452	
	Q-4	003-369	003-390				003-453	
▼	Q-6	003-370	003-391					
Rich	Q-8	003-371	003-392					

Needle Jets

Sizes	Series →	247	258	389	261	499
Lean	O-0		003-522	003-570	003-532	
	O-2		003-523	003-571	003-533	
	O-4		003-524	003-572	003-534	
	O-5					
	O-6			003-573	003-535	
	O-8		003-526	003-574	003-536	
	P-0	003-510	003-527	003-575	003-537	
	P-2	003-511	003-528	003-576	003-538	003-606
	P-4	003-512	003-529	003-577	003-539	
	P-5	003-513				
	P-6	003-514	003-530	003-578		
	P-8	003-515	003-531	003-579	003-549	003-609
	Q-0	003-516		003-580		003-610
	Q-2	003-517		003-581		003-611
	Q-4	003-518		003-582		003-612
	Q-6	003-520		003-583		
	Q-8	003-521		003-584		
	R-0	003-553		003-585		
	R-2	003-554		003-586		
	R-4	003-555		003-587		
	R-6	003-556		003-588		
Rich	R-8	003-557	005-589	003-589		

Needle Jets (continued)

Sizes	Series →	568 (RS38-40)	Series →	568 (RS34-36)	Series →	224
Lean	Y-0	003-663	O-6	003-650	Q-5	003-560
	Y-2	003-664	O-8	003-651	Z-0	003-495
	Y-4	003-665	P-0	003-652	Z-5	003-496
	Y-6	003-666	P-2	003-653	AA-0	003-497
	Y-8	003-667	P-4	003-654	AA-5	003-498
	Z-0	003-668	P-6	003-655	BB-0	003-499
	Z-2	003-669	P-8	003-656	BB-5	003-500
	Z-4	003-670			CC-0	003-501
Rich	Z-6	003-671			CC-5	003-502

Sizes	Series	*723* (HSR)	Series	*640* (TM33)
Lean	Y-2	003-685	P-4	003-698
	Y-4	003-686	P-6	003-699
	Y-6	003-687	P-8	003-700
	Y-8	003-688	Q-0	003-701
Rich	Z-0	003-689	Q-2	003-702

TMX

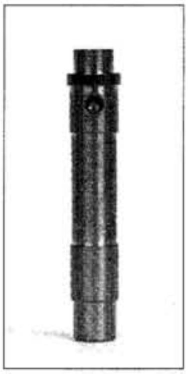
Sizes	Series	633 (new CR's & YZ's)
Lean	S-4	003-720
	S-7	003-722
	S-8	003-723
	S-9	003.724
Rich		

Needle Jets

The needle jet is the main fuel passage to the main bore (venturi) of the Mikuni carburetor. Depending on the inside diameter of a specific needle jet, this will also affect the function of the needle. Therefore, needle jets and needles act together as the main system in controlling the amount and mixture of the fuel which is drawn in mid-range (1/4 - 3/4) throttle operation.

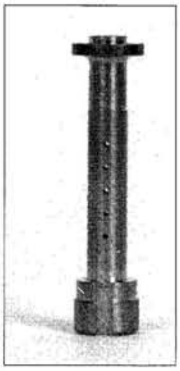
Two Basic Types of Needle Jets

PRIMARY TYPE



"P"
Primary Choke Type

BLEED TYPE



"B"
Bleed Type

Using the application chart located on page 71, it is noted that certain needle jets require a specific type of main jet because there are two types of main jets (4/042 & N100/604) that have different fuel flow rate characteristics. Also, needle jets are available not only in types, but series and sizes. Use Mikuni series numbers for style of the needle jet. Their sizes (inside diameter size) within each series are listed according to a letter-number combination. The letter shows the inside diameter size in increments of .50mm.

For example, the difference between P-2 and Q-2 is that the inside diameter of needle jet size Q-2 is .050mm greater than P-2.

The number shows the inside diameter size in increments of.010mm.

For example, the difference between P-2 and P-4 is that the inside diameter of needle jet size P-4 is .010mm greater than P-2.

Exception: (-5) is measured as an increment increase of .005mm. For example, the difference between P-4 and P-5 is that the inside diameter of needle jet size P-5 is .005mm greater than P-4.

LEAN N-O
↑
N-2
N-4
N-6
N-8
O-0
O-2
O-4
O-6
O-8
P-0
P-2
P-4
P-5
P-6
P-8
Q-0
Q-2
Q-4
Q-6
Q-8
R-0
R-2
R-4
R-6
↓
RICH R-8

For Mikuni Series #224

LEAN Z-0
↑
Z-5
AA-0
AA-5
BB-0
BB-5
CC-0
↓
RICH CC-5

Note: Letters Z, AA, BB, and CC are sizes in increments of .050mm.

Numbers 0 & 5 are sizes in increments of .025mm.

Series	Size	Type	Carb Application
159	O-0 thru R-8	P	30 - 36mm Spigot
166	O-0 thru R-8	P	38mm Spigot
169	N-0 thru Q-8	P	28, 30mm Small Body
171	O-0 thru Q-8	P	30mm Flange
172	O-0 thru Q-8	P	28mm Flange
175	N-0 thru Q-8	B	28mm Spigot
176	N-0 thru Q-8	B	30 - 36mm Spigot
182	N-0 thru Q-8	P	26mm Spigot
188	O-0 thru Q-8	P	32mm Flange, Kawasaki
192	N-0 thru O-8	P	26mm Flange
193	N-0 thru O-8	P	24mm Flange
205	O-0 thru Q-8	P	34mm Flange
211	N-0 thru Q-8	P	Kaw KR250/350/750
224	Figure "B"	P	40-44mm Spigot
235	O-0 thru Q-8	P	30mm Flange
247	P & Q only	P	Yamaha 250, YZ400, IT400
258	O & P only	B	Yamaha TT, SR, XT500 Suzuki DR, SP, GS550 GS750/850, Kaw KZ650,/1000
261	N-8 thru Q-8	B	VM29 and VM33 Smoothbores
389	O-0 thru R-8	P	TM32, 34, 36, 38, 41 Pro-Series and Flat-Slide
499	P-2 thru Q-4	B	TM33 Flat Slide Smoothbore
568	O-6 thru P-8	P	RS34, 36 Radial FS Smoothbore
568	Y-0 thru Z-6	P	RS38, 40 Radial FS Smoothbore

Mikuni Needle Jet Orifice Diameters

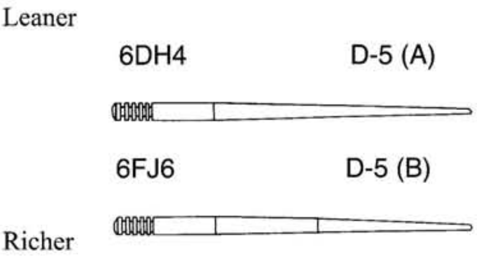
	-0	-1	-2	-3	-4	-5	-6	-7	-8	-9
N	2.550	2.555	2.560	2.565	2.570	2.575	2.580	2.585	2.590	2.595
O	2.600	2.605	2.610	2.616	2.620	2.625	2.630	2.635	2.640	2.645
P	2.650	2.655	2.660	2.665	2.670	2.675	2.680	2.686	2.690	2.695
Q	2.700	2.705	2.710	2.715	2.720	2.725	2.730	2.735	2.740	2.745

Quick Reference Chart for Needle Selection

(average Performance Chart)

Note: The following listing of needles are simply the *average* performance of a needle between 1/4 and 3/4 throttle opening. Needles are constructed such that a given point on a needle, (for example, at 3/4 throttle opening), the needle *may* be fount to perform *richer* at this given point when compared to the same given point on another needle, but according the the *average* performance chart, the needle should perform *leaner*.

For example: Average Performance chart



At D-5 (A), the taper diameter is 1.915, at D-5 (B), the taper is 2.040; the taper diameter at D-5 (A) is smaller than D-5 (B). At this given point of throttle opening (3/4), needle 6DH4 will run slightly richer than 6FJ6, but the average performance will still be that 6DH4 will be a leaner needle because it will perform leaner at more given points than a 6FJ6. Consequently, if you are concentrating on a specific throttle opening for competition use, be certain to check the taper diameter at that point of throttle opening.

For a more detailed and comprehensive explanation of the various needles as to their taper diameters at given points, see **NEEDLE TAPER DIAMETER DIMENSION CHARTS.**

THE QUICK REFERENCE CHART FOR NEEDLE SELECTION was prepared by measuring the needles as to their diameter at given points. Given points are 10mm apart from each other.

By computing the different measurements and arranging them in order of taper thickness or thinness, three categories for application of needles were determined.

Category I - *Competition.* **For example, motorcross racing and desert racing where mid-range throttle opperation is vital.**

Category II - *Racing.* **For exanple, Road racing, where 3/4 to full throttle operation is vital.**

Category III - *Overall.* **For example, Street riding, where the full range of throttle operation is required.**

NEEDLES
#4 SERIES

	COMPETITION	RACING	OVERALL
LEANER 1	4D8	4P3	4P3
↑ 2	4DH7	4D8	4D8
3	4DG6	4D3	4D3
4	4P3	4F10	4DG6
5	4D3	4DG6	4DH7
6	4F6	4F6	4F10
7	4F10	4DH7	4F6
8	4F15	4F15	4F15
9	4E1	4E1	4E1
10	4J13	4L13	4L13
11	4L6	4J11	4J13
↓ 12	4L13	4J13	4J11
RICHER 13	4J11	4L6	4L6

NEEDLES
#5 SERIES (A)

	COMPETITION	RACING	OVERALL
LEANER 1	5D6	5C4	5C4
↑ 2	5DI20	5D6	5D6
3	5C4	5D5	5D5
4	5EJ13	5DI20	5DI20
5	5J9	5D1	5F18
6	5F18	5F18	5D1
7	5DP7	5F16	5EJ13
8	5FL14	5FJ9	5F3
9	5F3	5F3	5EH7
10	5EH7	5EJ13	5FJ9
11	5FL7	5EH7	5DP7
12	5D5	5DH215	5FL14
13	5EI3	5FL14	5FL7
14	5L1	5FL7	5E13
15	5J6	5E13	5F16
16	5D1	5DP7	5DH21
17	5FJ9	5J9	5J9
18	5F16	5J6	5J6
↓ 19	5DH21	5L1	5L1
RICHER 20	5F12	5F12	5F12

NEEDLES
#5 SERIES (B)

Longer than #5 series (A); see NEEDLE TAPER DIAMETER DIMENSION CHART (B) Pg.

	COMPETITION	RACING	OVERALL
LEANER 1	5EP8	5DP2	5DP2
2	5EJ11	5DL13	5DL13
3	5EL9	5EJ11	5EJ11
4	5FL11	5EL9	5EL9
5	5I4	5EP8	5EP8
6	5DL13	5FL11	5FL11
RICHER 7	5DP2	5I4	5I4

NEEDLES
#6 SERIES

	COMPETITION	RACING	OVERALL
LEANER 1	5F54	6F3	6F3
2	6L1	5F54	5F54
3	6DH4	6FJ6	6FJ6
4	6FJ6	6DH7	6DH7
5	6F3	6F5	6DH4
6	6DH7	6F8	6F9
7	6F9	6DH4	6F8
8	6DP5	6F9	6L1
9	6F8	6F16	6F16
10	6J1	6CF1	6CF1
11	6DP1	6DH2	6F5
12	6DH2	6FJ11	6DH2
13	6F16	6F4	6FJ11
14	6CF1	6L1	6F4
15	6J3	6J1	6J1
16	6F4	6J3	6J3
17	6N1	6DH3	6DP5
18	6FJ11	6DP5	6DH3
19	6F5	6DP1	6DP1
RICHER 20	6DH3	6N1	6N1

NEEDLES
#7 SERIES

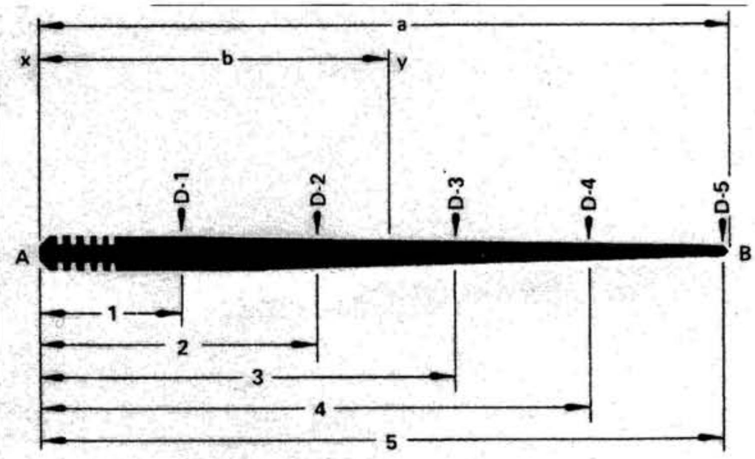
	COMPETITION	RACING	OVERALL
LEANER 1	7F06	7F06	7F06
2	7H2	7F2	7H2
3	7J2	7H2	7J2
RICHER 4	7F2	7J2	7F2

NEEDLE TAPER DIAMETER DIMENSION CHART (A)

(a) = Needle Length (mm)
(b) = Length between point (x) and the taper point (y)

1 = 10mm
2 = 20mm
3 = 30mm
4 = 40mm
5 = 50mm

D-1,-2,-3,-4 -4,-6 are the actual taper diameters at those given points in millimeters.



D-1 throughD-5 indicates diameter (mm) at each point.

	a	b	D-1	D-2	D-3	D-4	D-5
4D3	50.3	25.3	2.511	2.511	2.421	2.253	2.100
4D8	50.3	22.8	2.519	2.519	2.381	2.211	2.060
4E1	50.3	28.0	2.515	2.515	2.345	2.127	1.924
4DG6	50.3	24.0	2.518	2.518	2.405	2.119	1.850
4DH7	50.3	23.0	2.518	2.518	2.386	2.098	1.790
4F15	50.3	26.5	2.512	2.512	2.400	2.120	1.881
4J13	50.2	24.0	2.513	2.513	2.230	1.800	1.400
4L6	50.3	24.5	2.515	2.515	2.178	1.660	1.190
4F6	50.5	25.3	2.514	2.514	2.406	2.145	1.876
4L13	45.1	25.0	2.518	2.516	2.339	1.842	
4F10	50.2	24.5	2.513	2.513	2.385	2.135	1.877
4J11	41.5	21.3	2.512	2.506	2.188	1.776	
4P3	50.5	25.0	2.510	2.506	2.436	2.284	2.122

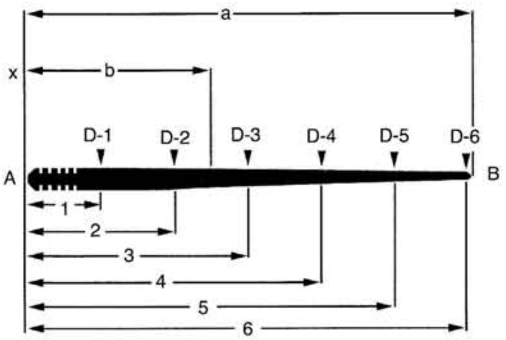
(a) = Needle Length (mm)
(b) = Length between point (x) and the taper point (y)

1 = 10mm
2 = 20mm
3 = 30mm
4 = 40mm
5 = 50mm
6 = 60mm

D-1,-2,-3,-4 -5,-6 are the actual taper diameters at those given points in millimeters

D-1 through D-6 indicates diameter (mm) at each point

	a	b	D-1	D-2	D-3	D-4	D-5	D-6
5D6	59.3	27.5	2.515	2.515	2.460	2.290	2.120	
5FJ9	59.2	35.0	2.517	2.517	2.517	2.364	2.021	
5DI20	59.1	28.2	2.520	2.520	2.479	2.311	1.980	
5F3	58.0	27.4	2.519	2.519	2.419	2.135	1.863	
5EH7	57.6	28.5	2.517	2.517	2.473	2.210	1.848	
5EI3	57.5	29.5	2.515	2.515	2.484	2.197	1.803	
5EJ13	57.8	26.5	2.519	2.519	2.431	2.210	1.766	
5DL13	60.2	32.0	2.515	2.515	2.515	2.362	1.922	1.463
5EJ11	60.3	28.5	2.515	2.515	2.515	2.241	1.839	1.420
5EL	60.3	27.0	2.517	2.517	2.441	2.221	1.780	1.248
5FL11	60.3	28.2	2.518	2.518	2.438	2.175	1.740	1.256
	60.2	33.0	2.513	2.513	2.513	2.245	1.780	1.120
5FL14	58.0	28.0	2.520	1.520	2.440	2.170	1.735	
5FL7	58.0	28.0	2.518	2.518	2.440	2.170	1.735	
5DP7	57.6	26.4	2.512	2.512	2.440	2.259	1.580	
5J6	58.0	27.5	2.518	2.518	2.340	1.890	1.450	
5L1	58.0	27.0	2.518	2.518	2.330	1.811	1.297	
5C4	55.1	24.0	2.516	2.516	2.448	2.310	2.179	
5F18	58.0	27.0	2.521	2.521	2.515	2.257	2.006	
5J9	58.0	27.0	2.522	2.520	1.432	1.996	1.505	
5F12	51.5	23.3	2.021	2.021	1.882	1.631	1.375	
5D1	53.5	27.6	2.510	2.510	2.496	2.338	2.169	
5DP2	60.3	32.4	2.515	2.514	2.513	2.418	2.067	1.418
5I4	60.0	27.0	2.514	2.509	2.442	2.071	1.690	1.332
5D5	57.6	30.0	2.513	2.513	2.510	2.366	2.205	



NEEDLE TAPER DIAMETER DIMENSION CHART(C)

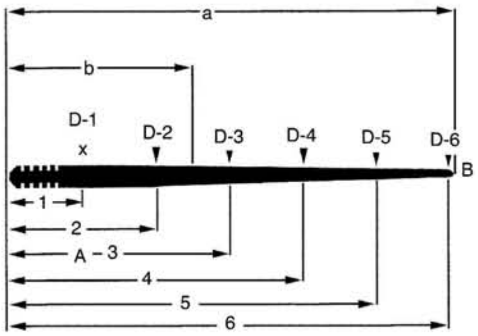
(a) = NeedleLength (mm)
(b) = Length between point (x) and the taper point (y)

D-1through D-6 indicates diameter (mm) at each point.

	a	b	D-1	D-2	D-3	D-4	D-5	D-6
6H1	62.3	37.5	2.510	2.510	2.510	2.412	2.041	1.696
6DH2	62.3	28.0	2.511	2.511	2.466	2.295	2.000	1.660
6F9	62.3	28.9	2.516	2.516	2.475	2.210	1.949	1.678
6CF1	61.5	29.5	2.512	2.512	2.429	2.240	1.974	1.710
6FJ6	62.3	35.2	2.505	2.505	2.505	2.376	2.040	1.606
6DH3	62.3	22.0	2.512	2.512	2.458	2.286	1.948	1.607
6J3	62.3	36.7	2.515	2.515	2.515	2.359	1.912	1.456
6L1	62.3	37.0	2.512	2.512	2.512	2.335	1.826	1.313
6DP5	62.3	32.1	2.518	2.518	2.518	2.372	1.834	1.141
6N1	62.3	37.0	2.514	2.514	2.514	2.278	1.672	1.058
6DP1	62.3	28.9	2.511	2.511	2.476	2.312	1.748	1.075
6F3	60.5	34.2	2.512	2.512	2.512	2.313	2.050	
6DH4	62.3	25.5	2.520	2.520	2.440	2.258	1.915	1.575
6J1	64.0	36.2	2.517	2.517	2.517	2.339	1.919	1.495
6DH7	62.2	28.5	2.516	2.516	2.505	2.316	2.009	1.688

1 = 10mm
2 = 20mm
3 = 30mm
4 = 40mm
5 = 50mm
6 = 60mm

D-1, -2,-3,-4, -5,-6 are the actual taper diameters at those given points in millimeters



NEEDLE TAPER DIAMETER DIMENSION CHART (D)

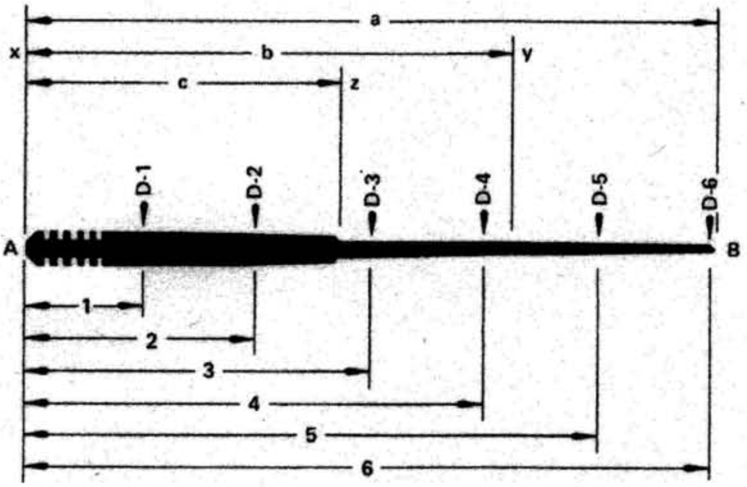
D-1through D-6 indicates diameter (mm) at each point.

	a	b	c	D-1	D-2	D-3	D-4	D-5	D-6
6F5	62.3	38.1	19.0	2.515	2.456	2.454	2.364	2.098	1.840
6F4	62.3	32.0	19.4	2.515	2.442	2.436	2.206	1.939	1.678
6F8	62.3	34.0	21.5	2.512	2.512	2.386	2.214	1.945	1.688
6FJ11	62.3	36.0	18.7	2.519	2.481	2.481	2.367	2.030	1.610
5F16	59.1	36.7	18.5	2.519	2.489	2.489	2.372	2.104	
5DH21	52.3	30.1	16.5	2.515	2.470	2.465	2.328	2.024	
6F16	64.6	31.2	18.4	2.520	2.404	2.400	2.201	1.941	1.679

(a) = Neddle Length (mm)
(b) = Length between point (x) and the taper point (y)
(c) = Length between point (x) the pronounced taper point (z)

1 = 10mm
2 = 20mm
3 = 30mm
4 = 40mm
5 = 50mm
6 = 60mm

D-1,-2,-3,-4, -5,-6 are the actual taper diameter at those given points in millimeters



NEEDLE TAPER DIAMETER DIMENSION CHART (E)

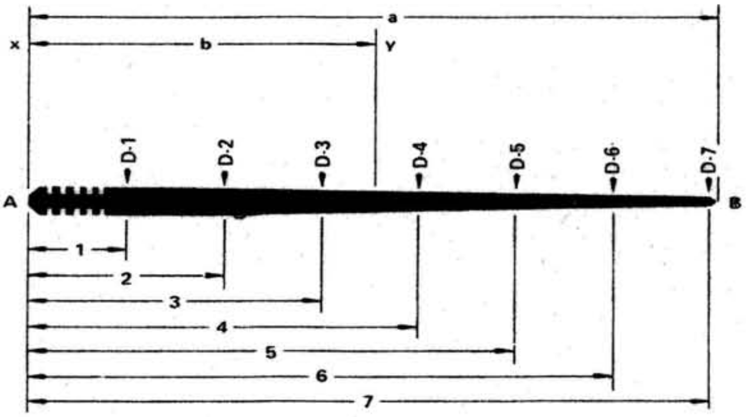
D-1through D-7 indicates diameter (mm) at each point.

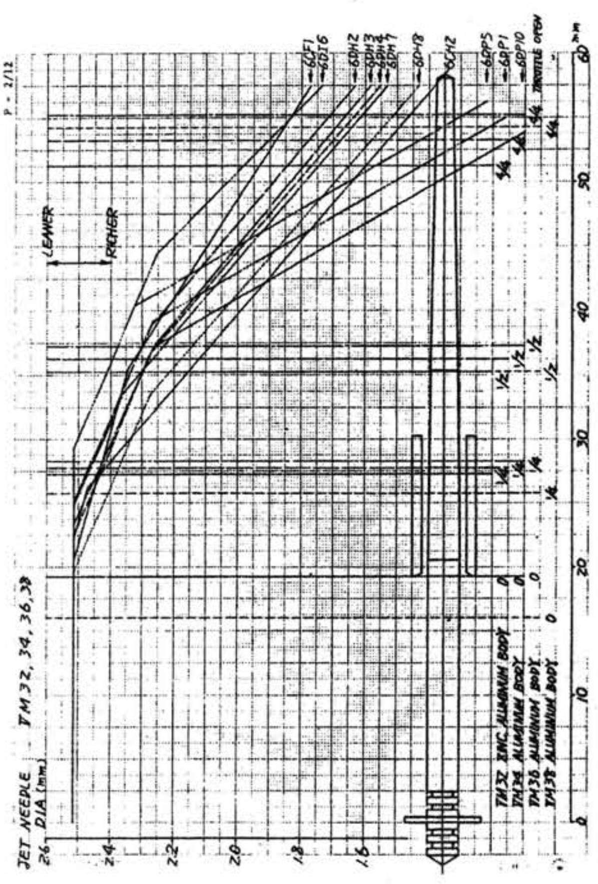
(a) = Needle Length (mm)
(b) = Length between point (x) and the taper point (y)

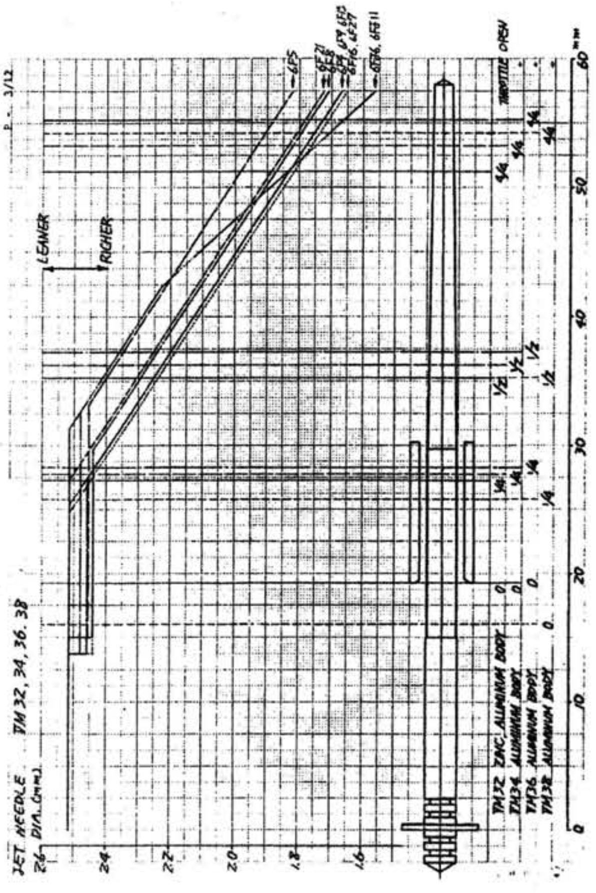
1 = 10mm
2 = 20mm
3 = 30mm
4 = 40mm
5 = 50mm
6 = 60mm

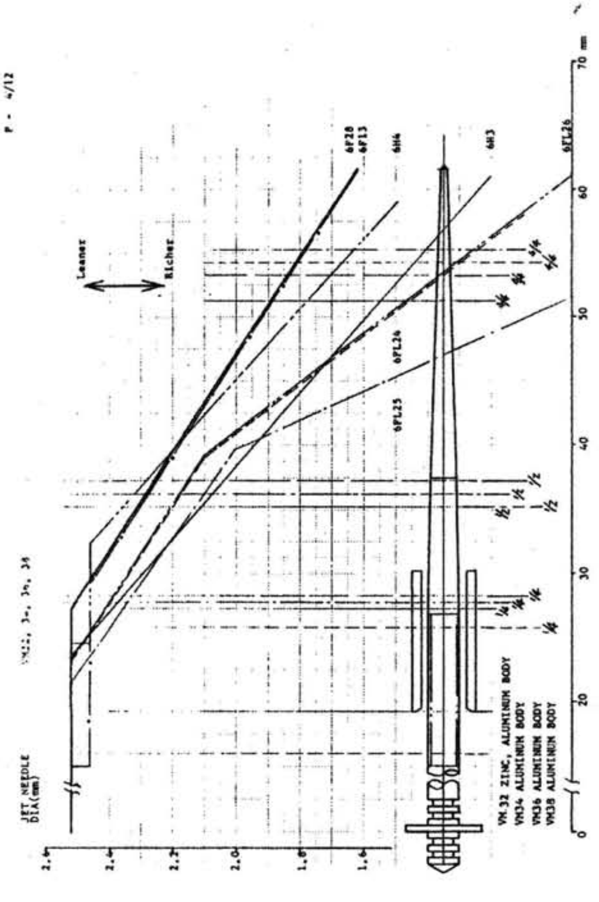
D-1,-2,-3,-4, -5,-6,-7 are the actual taper diameter at those given points in millimeters

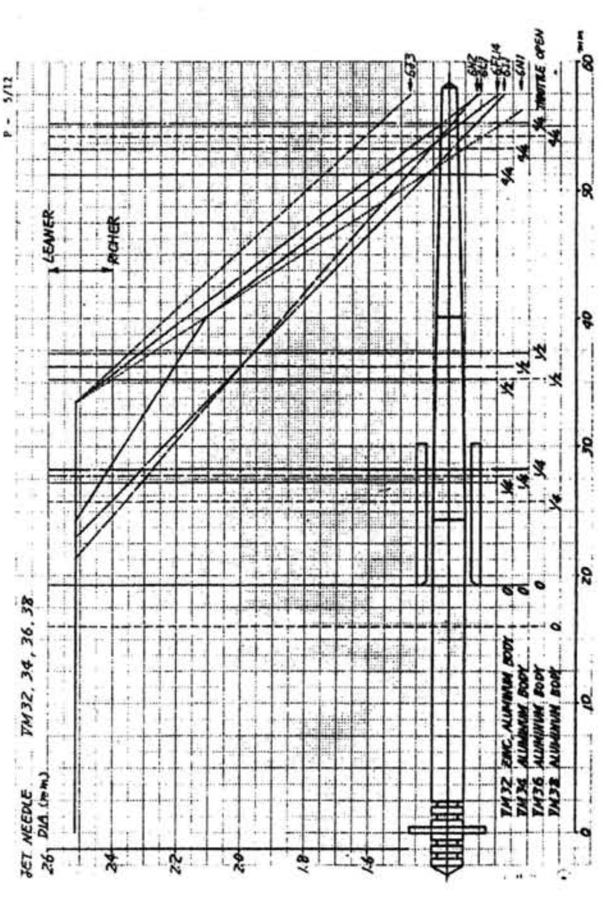
	a	b	D-1	D-2	D-3	D-4	D-5	D-6	D-7
7F06	72.3	29.0	3.005	3.005	2.951	2.680	2.415	2.140	1.876
7H2	72.3	28.9	3.005	3.005	2.928	2.575	2.230	1.868	1.507
7J2	72.3	28.8	3.005	3.005	2.904	2.460	2.010	1.569	1.125
7F2	73.2	43.5	2.515	2.515	2.515	2.515	2.312	2.040	1.703

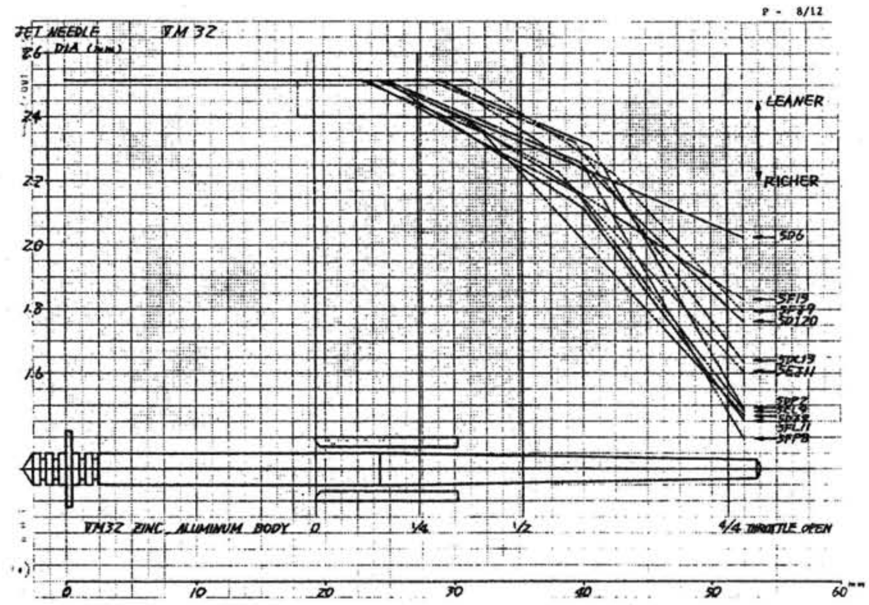


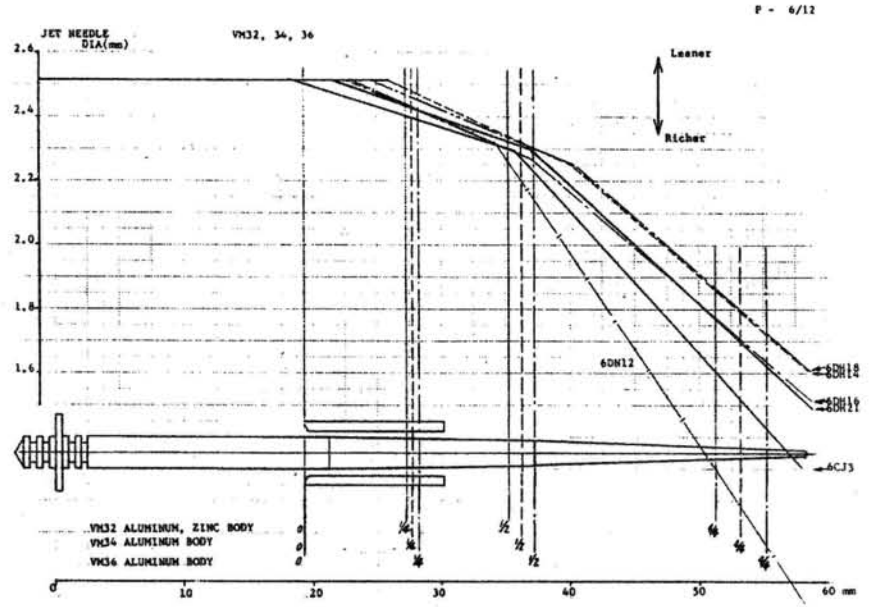

P - 2/12
JET NEEDLE DIA (mm)
TM32, 34, 36, 38
2.6
2.4
2.2
2.0
1.8
1.6
LEANER
RICHER
6CF1
6DI6
6DH2
6DH3
6DH4
6DH7
6DH8
6CH2
6DP5
6DP1
6DP10
THROTTLE OPEN
0
1/4
1/2
3/4
4/4
TM32 ZINC, ALUMINUM BODY
TM34 ALUMINUM BODY
TM36 ALUMINUM BODY
TM38 ALUMINUM BODY
0
10
20
30
40
50
60 mm

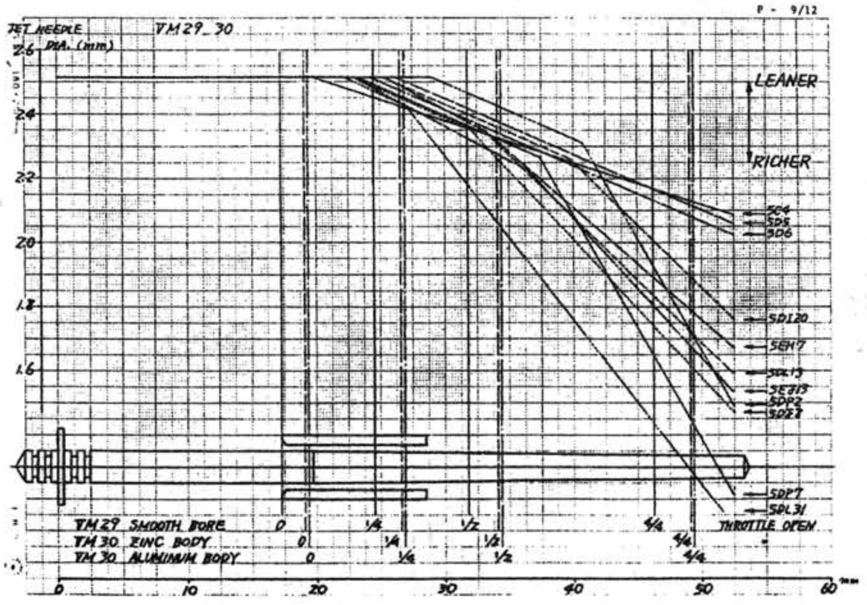

P - 3/12
JET NEEDLE DIA (mm)
TM32, 34, 36, 38
2.6
2.4
2.2
2.0
1.8
1.6
LEANER
RICHER
6F5
6F71
6F8
6F9 6F3
6F16, 6F27
6F6, 6F811
THROTTLE OPEN
0
1/4
1/2
3/4
4/4
TM32 ZINC, ALUMINUM BODY
TM34 ALUMINUM BODY
TM36 ALUMINUM BODY
TM38 ALUMINUM BODY
0
10
20
30
40
50
60 mm

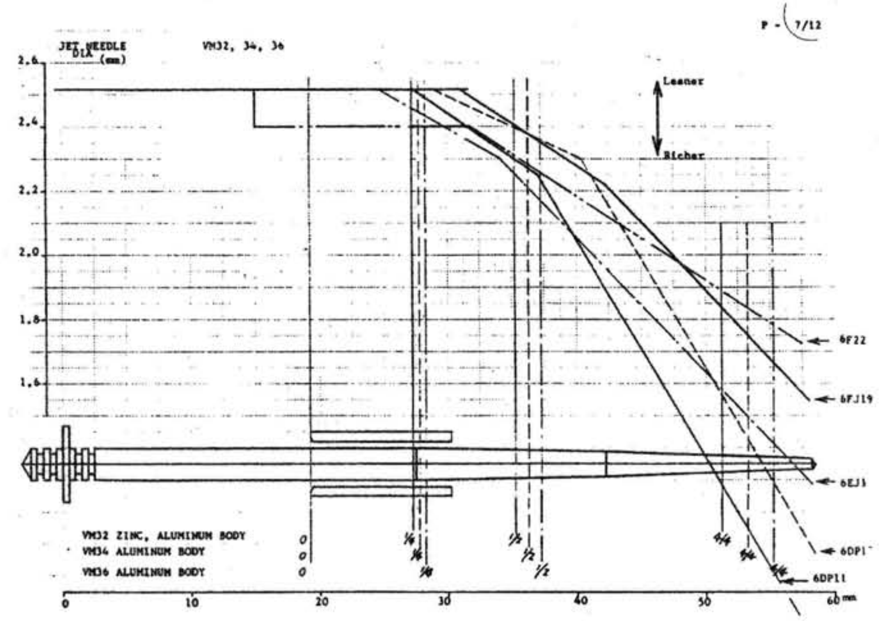

P - 4/12
JET NEEDLE DIA(mm)
VM32, 34, 36, 38
2.6
2.4
2.2
2.0
1.8
1.6
Leaner
Richer
6P28
6F13
6H4
6H3
6FL26
6FL24
6FL25
0
1/4
1/2
3/4
4/4
VM32 ZINC, ALUMINUM BODY
VM34 ALUMINUM BODY
VM36 ALUMINUM BODY
VM38 ALUMINUM BODY
0
20
30
40
50
60
70 mm

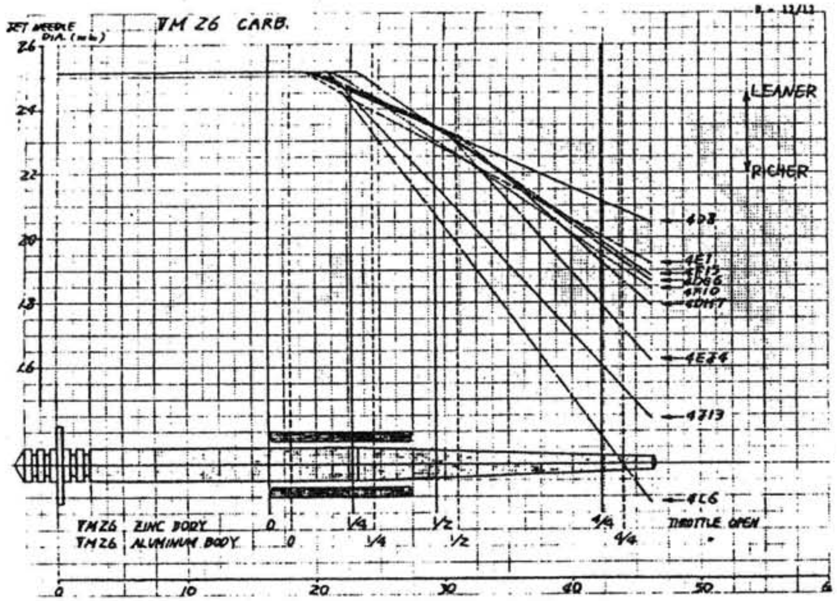

P - 5/12
JET NEEDLE DIA (mm)
TM32, 34, 36, 38
2.6
2.4
2.2
2.0
1.8
1.6
LEANER
RICHER
6J3
6H2
6J
6FL14
6J1
6N1
THROTTLE OPEN
0
1/4
1/2
3/4
4/4
TM32 ZINC, ALUMINUM BODY
TM34 ALUMINUM BODY
TM36 ALUMINUM BODY
TM38 ALUMINUM BODY
0
10
20
30
40
50
60 mm

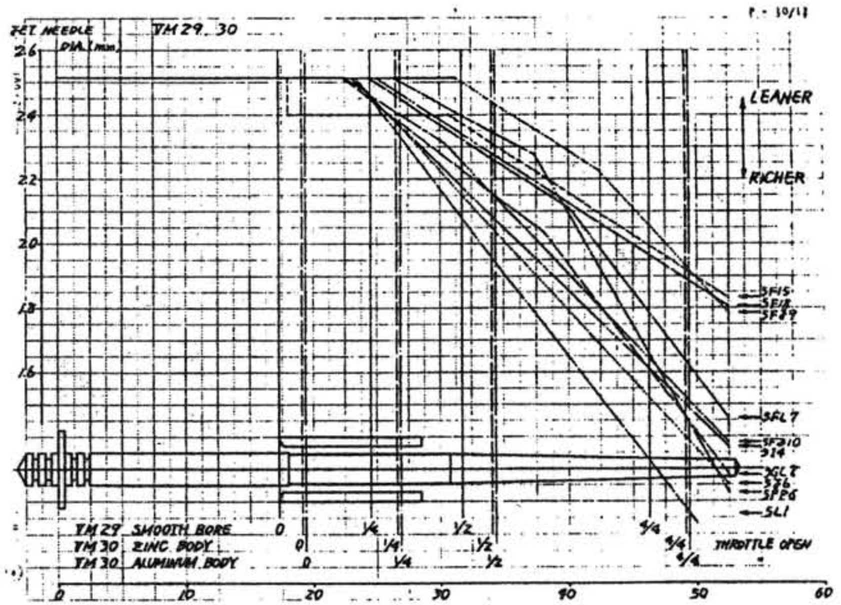

P - 8/12
JET NEEDLE DIA (mm)
VM 32
2.6
2.4
2.2
2.0
1.8
1.6
LEANER
RICHER
5D6
5F19
5F79
5D120
5DK13
5EZ11
5DP7
5CL9
5DZ8
5FL11
5FP8
VM32 ZINC ALUMINUM BODY
0
1/4
1/2
4/4 THROTTLE OPEN
0
10
20
30
40
50
60 mm

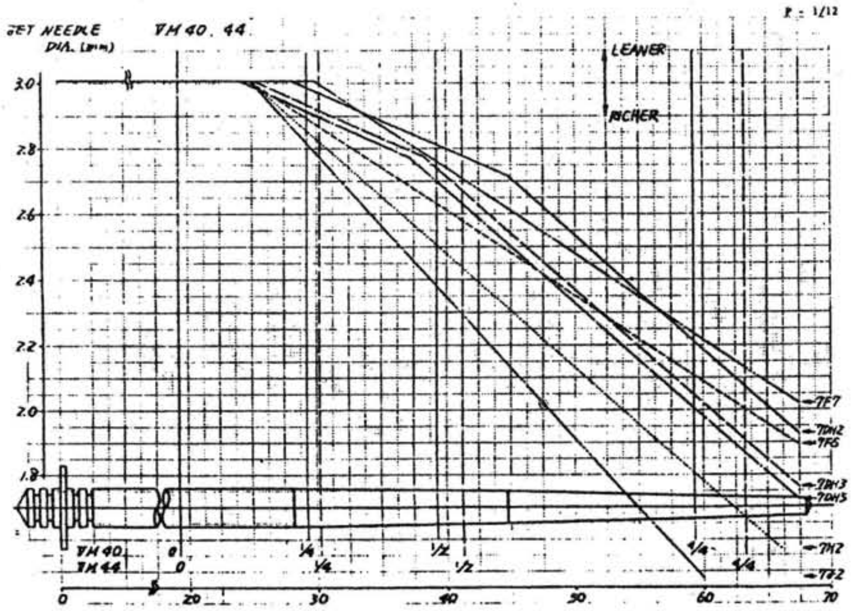

P - 6/12
JET NEEDLE DIA(mm)
VM32, 34, 36
2.6
2.4
2.2
2.0
1.8
1.6
Leaner
Richer
6DN12
6DH18
6DH14
6DH16
6DH21
6CJ3
VM32 ALUMINUM, ZINC BODY
VM34 ALUMINUM BODY
VM36 ALUMINUM BODY
0
1/4
1/2
4/4
0
10
20
30
40
50
60 mm

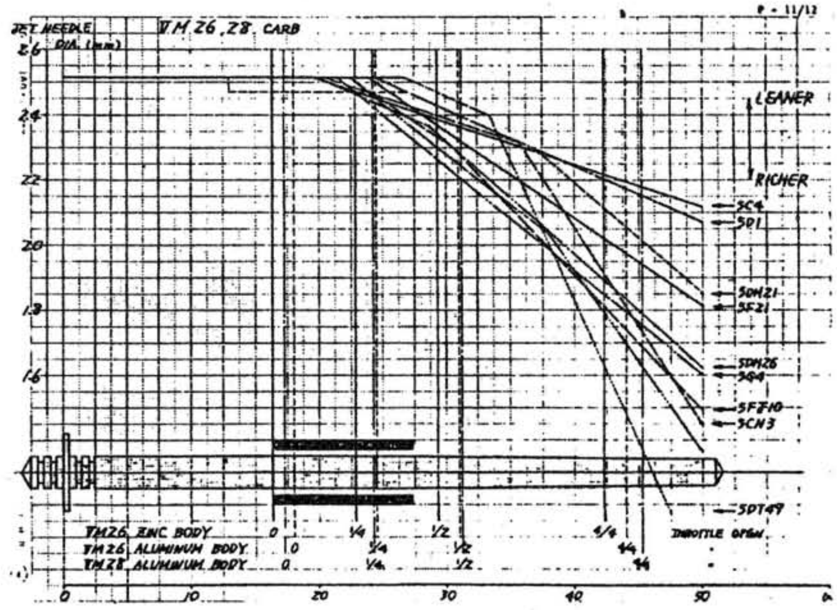

P - 9/12
JET NEEDLE DIA. (mm)
VM29, 30
2.6
2.4
2.2
2.0
1.8
1.6
LEANER
RICHER
5C4
5D5
5D6
5D120
5EH7
5DL13
5EJ13
5DP2
5DZ8
5DP7
5DL31
THROTTLE OPEN
VM29 SMOOTH BORE
VM30 ZINC BODY
VM30 ALUMINUM BODY
0
1/4
1/2
4/4
0
10
20
30
40
50
60 mm


P - 7/12
JET NEEDLE DIA (mm)
VM32, 34, 36
2.6
2.4
2.2
2.0
1.8
1.6
Leaner
Richer
6F22
6FJ19
6EJ3
6DP1
6DP11
VM32 ZINC, ALUMINUM BODY
VM34 ALUMINUM BODY
VM36 ALUMINUM BODY
0
1/4
1/2
4/4
0
10
20
30
40
50
60 mm


JET NEEDLE DIA. (mm)
TM 26 CARB.
P = 12/13
26
24
22
20
18
16
LEANER
RICHER
4D8
4E1
4F15
4DG6
4F10
6DH7
4EZ4
4J13
4L6
THROTTLE OPEN
TM26 ZINC BODY
TM26 ALUMINUM BODY
0
1/4
1/2
4/4
0
10
20
30
40
50
60


JET NEEDLE DIA. (mm)
TM 29. 30
P = 10/13
26
24
22
20
18
16
LEANER
RICHER
5F15
5E18
5F39
5FL7
5F310
514
5GL7
5J6
5F26
5L1
THROTTLE OPEN
TM 29 SMOOTH BORE
TM 30 ZINC BODY
TM 30 ALUMINUM BODY
0
1/4
1/2
4/4
0
10
20
30
40
50
60


JET NEEDLE DIA. (mm)
TM 40. 44
P = 1/12
3.0
2.8
2.6
2.4
2.2
2.0
1.8
LEANER
RICHER
7F7
7DH2
7F6
7DH3
7DH5
7H2
7J2
TM 40
TM 44
0
1/4
1/2
4/4
0
20
30
40
50
60
70


JET NEEDLE DIA. (mm)
TM 26, 28 CARB
P = 11/13
26
24
22
20
18
16
LEANER
RICHER
5C4
5D1
5DH21
5F21
5DH26
5G4
5FZ10
5CH3
5DT49
THROTTLE OPEN
TM26 ZINC BODY
TM26 ALUMINUM BODY
TM28 ALUMINUM BODY
0
1/4
1/2
4/4
0
10
20
30
40
50
60

MIKUNI JET NEEDLE (VM, TM &RS)

4 Series

002-243	4D10
002-244	4D20
002-245	4DH7
002-246	4DH11
002-247	4DH22
002-249	4E1
002-251	4EJ4
002-254	4F15
002-256	4J11
002-257	4J13
002-258	4L6

5 Series

002-268	5DL31
002-271	5DP7
002-273	5DP39
002-276	5EJ11
002-279	5EL9
002-281	5F3
002-287	5F21
002-291	5FL14
002-292	5FP8
002-297	5L1
007-001	5FP17
002-264	5D5
007-002	5N13
007-004	5FP96
007-003	5J11

6 Series

002-299	6DH2
002-300	6DH3
002-301	6DH4
002-302	6DH7
002-303	6DH8
002-340	6DJ30
002-304	6DP1
002-341	*6DP4
002-307	6DP10
002-309	6DP17
002-312	6F4
002-313	6F5
002-314	6F8
002-315	6F9
002-316	6F13
002-317	6F15
002-318	6F16
002-319	6F21
002-321	6FJ6
002-712	*6FJ40
002-713	*6FJ41
002-324	6FL14
002-344	6FL25
002-325	6J1
002-327	6L1
002-349	*6FM46
002-328	6N1

*For TM36, TM38 and Pro-Series carbs

7 Series

002-332	7DH2
002-336	7DH3
002-345	7DH5
002-334	7E1
002-329	7F6
002-333	7F7

9 Series

007-035	9DZH01
007-037	9DZH03
007-038	9DZH04
007-020	9CHY03
007-022	9CHY05
007-023	9CHY06

Series Type	*Application*
#4	All 18mm Carburetors 22mm and 24mm Flange
#5	26mm -- 32mm Spigot 28mm -- 34mm Flange
#6	30mm -- 38mm Spigot
#7	40mm and 44mm Spigot

Carburetor Needle Shims *(12 pc. package)*

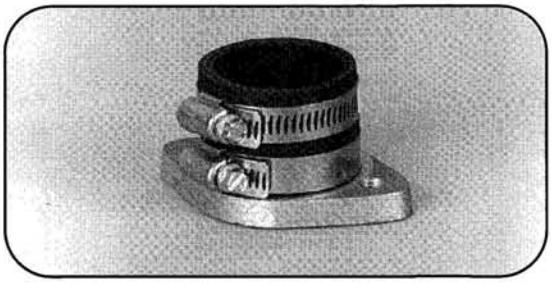
For most Mikuni types - **Order No. 009-395**
106" Inner Diameter x .250 Outer Diameter x .020 (.5mm) thick

MIKUNI MANIFOLDS AND ADAPTERS

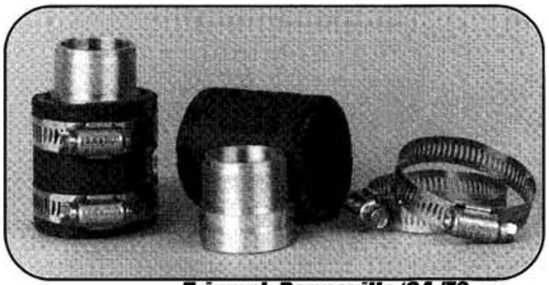
Application	Description	Carb Size	Sudco Part#
BULTACO			
70mm Stud Spacing	(SM16A)	30, 32, 34	**005-002**
Late Model	(SM17A)	36, 38	**005-004**
CZ			
360/400	(SM2)	34	**005-008**
125	(SM40)	30, 32, 34	**005-010**
HARLEY-DAVIDSON			
Sportster 900/1000	(SM7)	36, 38	**005-013**
Shovelhead	(SM7)	36, 38	**005-013**
Sportster 900/1000	(SM8)	40, 44	**005-014**
Shovelhead	(SM8)	40, 44	**005-014**
Knucklehead, Panhead	(SM9)	36, 38	**005-015**
Knucklehead, Panhead	(SM10)	40, 44	**005-016**
HONDA			
ATC90/110	(SM22A)	22	**005-023**
ATC200X (To-'85)	(SM-53)	28	**005-064**
ATC200X ('86-on)	(SM54)	28	**005-065**
ATC250R (81-84)	(SM-45A)	34.36, 38, Pro-Series 39, 41	**005-054***
Odyssey	(SM49A)	30,32,34,36, 38, Pro-Series 39, 41	**005-052**
XR250 (83-84)		32, 34 FS	**005-067**
XR350 (83-84)		34 FS, 35 Pro	**005-067**
HUSKY			
Late Model (reed valve)	(SM32)	36, 38	**005-032**
Air Box Adapter	(SM38)	30, 32, 34	**005-033**
NORTON COMMANDO			
Single Carb	(SM23)	32, 34	**005-037***
Single Carb	(SM23A)	36, 38	**005-038***
Dual Carb	(SM18)	30, 32, 34	**005-036***
NORTON ATLAS			
Single Carb		30, 32, 34	**005-088**
TRIUMPH			
Bonneville ('69 mid - '72) (coarse thread)	(SM13)	30, 32, 34	**005-043**
Bonneville ('69 earlier) (fine thread)	(SM14)	30. 32. 34	**005-044**
TR6, TR7 Single (to - '81)	(SM43)	30, 32, 34	**005-045**
Bonneville Flange Mount	(SM44) pair	30, 32, 34	**005-060**
(MID '72 to mid '78)	(SM44) single	30, 32, 34	**005-060A**
YAMAHA			
YSR50	(SM55)	20,22	**005-066**

Alloy Maniforld Adapter w/ rubber & clips

Order No.	Description	Carb Size	
005-800	Amal to Mikuni	VM26-28	2"
005-801	Amal to Mikuni	VM30	2"
005-802	Amal to Mikuni	VM32	2"
005-803	Amal to Mikuni	VM34	2"
005-810	Amal to Mikuni	VM36/38	65mm
005-815	Flange VM34 to XS650		



Harley-Davidson Sporty Shovel
Order No. 005-013

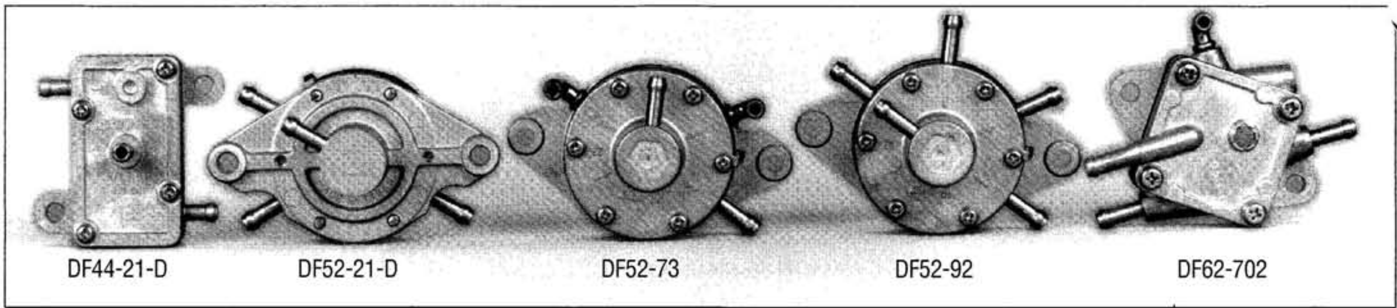


Triumph Bonneville '64-'72
Order No. 005-043, 005-044

Norton Commando
Order No. 005-037, 005-038

Triumph Bonneville '72-'78
Order No. 005-060

MIKUNI FUEL PUMPS & FUEL PUMP REBUILD KITS



Mikuni Part No.	Sudco Order No.	Number of Outlets	Style	Mounting	Flow Rate Liters/HR
DF44-211-D	**002-220**	**1**	**SQUARE**	**FLUSH**	**14**
DF52-21-D	**002-221**	**2**	**ROUND**	**BRACKET**	**35**
DF52-73	**002-228**	**2**	**ROUND**	**FLUSH**	**35**
DF52-92	**002-229**	**3**	**ROUND**	**FLUSH**	**35**
DF52-136	**Call**	**2**	**SQUARE**	**FLUSH**	**31**
DF62-702	**002-227**	**2**	**PENTAGON**	**FLUSH**	**65**

Diaphragm Fuel Pumps

Mikuni offers a complete line of Diaphragm Fuel Pumps for use in all types of vehicles including snowmobiles and watercraft with 2-stroke engines. The diaphragm pump uses 2-stroke engine crankcase pressure to pump fuel from the fuel tank to the carburetor. Diaphragm pumps are used in vehicles like snowmobiles, watercraft and even dirtbike and ATVs where fuel tanks cannot be positioned to supply fuel to the carburetor by gravity feed, and there may not be an electrical system available to power an electrical fuel pump. Diaphragm fuel pumps are available in 1,2, or 3 outlet designs for either Flush or Bracket Mounting.

MIKUNI
GENUINE COMPONENTS

Fuel Pump Rebuild Kits

Order Number	Contents	Description	Quantity	Remarks
002-225	CW2=0416	Screw	4	w/washer
DF44	DF44-201/03	Gasket	1	Fiber
	DF44-201/04	Diaphragm	1	Clear
	DF44-201/05	Membrane	1	Thin rubber
002-223	DF52/105	Gasket	1	Thick fiber
DF52 - All	DF52-48/10	Diaphragm	2	Transparent film
(except for DF52-136)	DF52-48/05	Gasket	1	Thin rubber
	DF52/113	Gasket	1	Thin rubber
	DF52/36A	Gasket	1	Thick fiber
	DF52/27	Valve	2	Clear
	DF44/26	Grommet	2	Black
002-226	DF62-601/03	Gasket	2	Paper Gasket
DF62-702	DF62-601/04	Diaphragm	2	Clear
	DF62-701/03	Gasket	2	Paper Gasket
	DF62-701/05	Check Valve	2	Clear/Grommet

Note: Fuel Pump Rebuild Kit for **DF52-136** is not available.

Tygon Fuel Lines

These premium quality fuel lines have been formulated to withstand current motor fuels including all unleaded gasolines, gasanol, and alcohol. This new fuel line material is flexible from 35° to 165° F, resists ozone and sunlight, and stretches over most common motorcycle fuel fittings. Wall thickness is comparable to O.E.M. type lines, for use with common clamps.

clear yellow
gray

Gray

	Order No.
3/16" - 5mm bore (I.D)	**009-029**
1/4" - 6mm bore (I.D)	**009-030**
5/16"- 8mm bore (I.D)	**009-031**

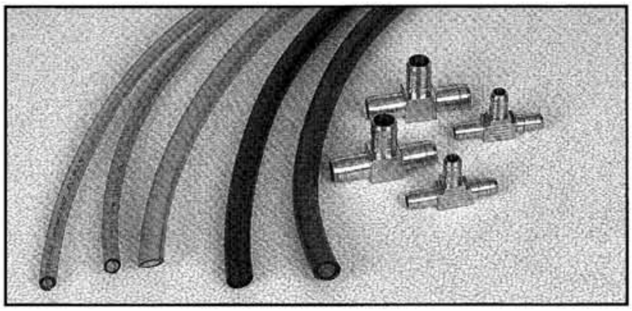
Yellow (clear)

1/4" 6mm bore (I.D)	**009-035**

Sudco Polyurethane Fuel Hose

(Order by the foot)

	Color	*Size*	*Order #*
Carburetor Vent Hose	**Blue**	**.170"I.D.**	**009-005**
Watercraft Primer Hose	**Blue**	**.125"I.D.**	**009-010**
1/4" Fuel Hose	**Purple**	**.250"I.D.**	**009-015**
1/4" Fuel Hose	**Blue**	**.250"I.D.**	**009-020**

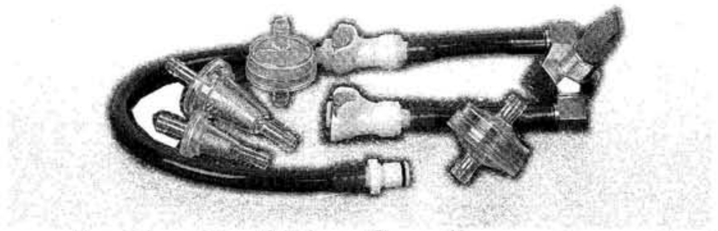


Brass Fuel "T" Fittings (Shown Above)

1/4" Brass Fuel "T"	**009-100**
3/8" Brass Fuel "T"	**009-102**

Carburetor Needle Shims (12 pc. package)

For most Mikuni types - **Order No. 009-395**
106" Inner Diameter x .250 Outer Diameter x .020 (.5mm) thick



In-Line Fuel Line Couplings (Shown Above)

For quick disconnections between tanks, pumps, filter and carbs. Components are available separately. Order "kit" to make connection

5/16" fittings straight thru body (female)	**each**	**009-150**
5/16" fittings straight thru coupling (male)	**each**	**009-151**
	kit	**009-170**
5/16"fittings shut-off body (female)	**each**	**009-152**
5/16" Shut-off coupling (male)	**each**	**009-153**
	kit	**009-171**

Fuel Filters

"Visu-Filter"- Economical, high quality, see through design

Street Filters - sintered bronze element

1/4" fitting X 2" body "Slime Line"	**009-200**
1/4" fitting X 3" body "High Capacity"	**009-202**

Competition Filters - stainless steel element

1/4" fitting X 1.3" diameter	**009-210**
5/16" fitting X 1.5" diameter	**009-212**

Aluminum Body Fuel Filters

Super short polished aluminum body with cleanable bronze element

5/16" fittings, single in, single out SS1P	**009-220**
5/16" fittings, double in, double out SS2P	**009-221**

Mikuni Pocket Tuner

A handy pocket-size calculator which can be used to determine required jetting changes in Mikuni carburetors due to climate and temperature changes. The Pocket Tuner is applicable to both single and multi-carburetor applications on two-stroke and four-stroke engines. It also has a guide for determining rich or lean carburetor conditions.

Mikuni Pocket Tuner 002-430

MIKUNI
Performance Starts Here
RACING CARBURETORS
Main Jet Tuning Calculator
MIKUNI
POCKET TUNER
FOR BEST PERFORMANCE INSIST ON GENUINE MIKUNI JETS

MIKUNI CARB KITS

YSR50 Kits 20 or 22mm :

001-537	20mm Carb/Manifold kit
001-538	22mm Carb/Manifold kit

Kits Include: 20 or 22mm carb, K&N air filter, and manifold adapter w/cable

Royal Enfield Kit includes(VM34):

001-237	34mm

Kits Include: rubber flange, K&N air filter, Cable, and Sudco/Mikuni Tuning Manual.

VM Carburetor Kits for Harley Davidson

Sportster/Shovelhead

001-200	38mm	HDS-101/38mm
001-204	40mm	HDS-101A/40mm
001-202	44mm	HDS-101B/44mm

Knucklehead/Panhead

001-201	38mm	HDS-102/38mm
001-207	40mm	HDS-102A/40mm
001-205	44mm	HDS-102B/44mm

Kits Include: manifold adapter, K&N air filter, cabl, hose clamps, pilot jets, and main jets

VM Carburetor Kits for Triumph

Bonneville ***(Require 2 carbs)***

001-275	1969-mid1972	30mm
001-276	"	32mm
001-277	"	34mm
001-278	1964-mid 1968	30mm
001-279	"	32mm
001-280	"	34mm
001-290	1973-78	30mm
001-291	"	32mm
001-292	"	34mm
001-273	1979-on	32mm

Kit Includes: manifold adapter, air cleaner, hose clamps, pilot jets, and main jets.

TR6/TR7

001-293	1947-81	30mm
001-294	"	32mm
001-295	"	34mm

Kit Includes: manifold adapter , rubber flange, air filter, pilot jets, and main jets.

VM Carburetor Kits for Norton

Single:	001-252	VM34mm
	001-253	VM36mm
	001-254	VM38mm
Dual:	001-250	VM32mm
	001-251	VM34mm

Kits Include: manifold, rubber flange, pilot jets, main jets, and Allenhead screws.

NOTE: VM Round slide carbs may be upgraded to TM flat side carbs on many applications. Ask your Sudco Sales Rep. for details.

British Throttle Cables

007-575	MK34/39	Norton Single 34mm: Straight Cable Adj.
007-576	MK36/39	Norton Single 36mm: Curved Cable Adj.
007-577	MK32/43	TR6 30-34mm
007-578	MK32/18	T120/140 Bonneville (*Note: 2 of 007-578 are req'd*)

TRX250X Kit

		Order No.
VM32	w/ throttle	001-242
	w/o throttle	001-243
TM32	w/ throttle	001-244
	w/o throttle	001-245

YFM350X Warrior Kit (TM36)

001-297	TM36

Kit includes: TM36 pumper carb, air box adapter, Push/Pull cable, Push/Pull throttle, and fuel hose.

cable(stock thumb):021-949

Honda XR-400 Kit (TM36)

001-240 TM36

Kit includeds: prejetted carb, adapter, fuel hose, push/pull cables

Honda XR-650 '00-'02 Kit (TM40)

001-238	TM40

Kit includeds: prejetted TM40 carb, extra pilot jets and main jets, A/F adapter, spigot, fuel hose, cables and manual.

PINGEL FUEL VALVES

Power-Flo™ Fuel Valves

(All valves are polished aluminum with 5/16" fuel fittings)

Japanese Cruisers: (direct bolt on, no adapter required)

Honda	VF750	Magna	'94-up	4321-CH	009-324
	VT1100	Shadow	'87-'97	4111-CH3	009-322
		Shadow Ace	'95-'97	6381-CH	009-327
		Aero	'98-up	6381-CH	009-327
		Spirit	all	6381-CH	009-327
	GL1500	Valkyrie	'97-'01	1311-CH	009-328
Kawasaki	VN800	Vulcan	'95-up	6281-CH6	009-326
	VN1500	Vulcan	'95-up	1211-CH6	009-320
Yamaha	XVZ13	Royal Star		4211-CH6	009-323
	XVS	V-Star		4211-CH6	009-323
	XV1600	Road Star		4211-CH6	009-323

Adapters (2 bolt tank pattern to 3/8" NPT Pingel Valves)

Most Japanese Brands

34mm bolt centers	A1602C	009-350
44mm bolt centers	A1702C	009-352
44mm with offset center hole	A1702C-O	009-353
46mm bolt centers	A1802C	009-355
50mm bolt centers	A1902C	009-357
Blank, drill your own	A1902C-B	009-359

Application			Year	Description	Power-Flo Fuel Valve Pingel No.	Power-Flo Fuel Valve Order No.	Adapter Pingel No.	Adapter Order No.
Most Japanese Bikes	Dual outlet - 3/8" NPT:			No Reserve	3210-D-AH	009-310	Please measure the bolt hole centers on your stock fuel valve and refer to the bolt hole centers on your stock fuel valve. See list above.	
				With Reserve	3211-D-AH	009-311		
	Single outlet with reserve - 3/8" NPT:			Facing Forward:	1211-AH	009-303		
	(Lever Left)			Facing Rear:	4211-AH	009-304		
				Facing Inward:	6211-AH	009-305		
Honda	CBR600	F2/F3/F4			3311-D-AH	009-334*		
	CBR900	RR	'93-'99		3311-D-AH	009-334*		
	CB1100	F	'83		6111-AH	009-307	A2000C	009-370
	CBX		'79-'81		6111-AH	009-307	A2003C	009-371
			'82		6111-AH	009-307	A2000C	009-370
Kawasaki	KZ900		all	Single Outlet:	6311-AH	009-302*		
				Dual Outlet:	3311-D-AH	009-334*		
	ZX9R		'98-'01		4121-AH	009-306	A1601C	009-369
	KZ1000	w/ thread on valve	all	Single Outlet:	6311-AH	009-302*		
				Dual Outlet:	3311-D-AH	009-334*		
	KZ1000/1100	w/ bolt on valve		Single Outlet:	6211-AH	009-305	A1702C	009-352
				Dual Outlet:	3211-D-AH	009-311	A1702C	009-352
	All 2-Stroke Triples			No Reserve:	8210-T-AH	009-316	A2002C	009-366
	KZ1300		all		6211-AH	009-305	A1702C	009-352
Suzuki	GSF600/1200	Bandit		Single Outlet:	4211-AH	009-304	A1602C	009-350
				Dual Outlet:	3211-D-AH	009-311	A1602C	009-350
	GSX-R750		'86-'95	No Reserve	32GSXR-D-AH	009-312	A1702C-0	009-353
			'96-'98	No Reserve	32GSXR-D-AH	009-312	A1602C	009-350
	GSX-R1100		'86-'99	No Reserve	32GSXR-D-AH	009-312	A1702C-0	009-353
	GS750-1100		'79-'83	Single Outlet:	6211-AH	009-305	A1702C	009-352
				Dual Outlet:	3211-D-AH	009-311	A1902C	009-357
	GSXF1100		all	Dual Outlet:	3211-D-AH	009-311	A1702C	009-352
							A1902C	009-357
	GS1150		'84-'85	Single Outlet:	6211-AH	009-305	A1702C	009-352
				Dual Outlet:	3211-D-AH	009-311	A1902C	009-357
Yamaha	YAMAHA			Dual Outlet:	3211-D-AH	009-311	A1602C	009-350
	FZR1000		all	Single Outlet:	6211-AH	009-305	A1602C	009-350
				Dual Outlet:	3211-D-AH	009-311	A1602C	009-350
	R1				4211-AH	009-304		
A1602C	009-350							

*** = Adapter included**

Adapter Nuts

Adapts 7/8" or 22mm diameter threaded male tank bung to 3/8" NPT valves	**A2001C**	009-365
Adapts 15/16" or 24mm diameter threaded male tank bung to 3/8" NPT valves	**A2002C**	009-366

K&N CUSTOM AIR FILTERS

Application	Carb	Flange Dimension	Filter Dimension	K&N Part No.	Sudco Part No.
HONDA					
XR185 200 005-112	VM,TM 28	1-11/16” / STRAIGHT		ROUND 4”	RU-0200
ATC 90,110, 185	VM 24-28	1-11/16” / 40°	Tapered, 4”	RU-1100	005-105
ATC 250r, ‘81-84	VM 30-34	2-1/4” / Straight	Round / 4”	RU-0600	005-113
	TM 32,34				
	PJ 34				
ATC 250R ‘81-84	TM 36,38	2-7/16” / Straight	Round / 4”	RU-0800	005-116
	PJ 36,38				
CBR 600/F-2	FCR 32,33	2-1/8” / Offset	Oval / 2-3/4”	RU-3000	005-178
(motorcycles only)	(2 each)	2-1/8” / Offset	Oval / 2-3/4”	RU-3010	005-179
CBR 600/F-2	FCR 32,33			RU-2852	005-187
(bikes and cars)					
CBR 900RR	FCR 39,41	2-7/16” / Dual	Pyramid	RU-2952	005-174
KAWASAKI					
KLT 200	VM,TM 28		Round 4”	RU-0200	005-112
ZX-6 ’88-94	FCR 35mm	2-7/16” / Dual	Pyramid	RU-2952	005-174
ZX-10 all years	FCR 37,39,41	2-7/16” / Dual	Pyramid	RU-2952	005-174
ZX-6 11 all years	FCR 37,39,41	2-7/16” / Dual	Pyramid	RU-2952	005-174
(mini sprints only)					
SUZUKI					
LT-230	VM,TM 28			RU-0500	005-108
LT-250 ‘85-91	VM,TM,PJ			RU-1770	005-123
	PWK, 36-41				
GSXR 750/1100	RS 36-41	2-1/8” / Straight	Tapered Oval	RC-0981	005-121
(air cooled)	FCR 39-41	2-3/8” / Dual	Straight Oval	RU-2922	005-184
GSXR 750/1100	FCR 37,39,41	2-3/8” / Dual	Straight Oval	RU-3092	005-340
(liquid cooled)					
RF 600/900	FCR 37,39				CALL
YAMAHA					
Trimoto 200	VM,TM 28-30			RU-0500	005-108
Banshee 350	TM, PWK 28	2-1/16” / 17.5°	Round / 5”	RU-1780	005-127
	TM, PWK 28	2-1/16” / 10°	Round / 6”	RU-1070	005-173
	VM 30-34				
	TM 32,34	2-1/4” / 5°	Round / 5”	RB-0610	005-310
	PWK 33,35	2-1/4” / 5°	Round / 6”	RU-0620	005-320
	PJ 34				
	VM,TM,PJ				
	PWK 38,39	2-7/16” / Straight	Round / 4”	RU-0880	005-324
RD,RZ, 350-400	VM,TM,PJ	2-1/4” / Straight	Round / 4”	RU-0600	005-113
	30-34				
FZR 400/600	FCR 32-33	2-1/8” / Offset	Oval / 4”	RC-2890	005-170
(all years)		(2 each required)	Oval / 4”	RC-2900	005-171
		2-1/8” / Offset			
FZR 750/1000	FCR 37,39,41	2-7/16” / Straight	Round / 4”	RU-0800	005-116
(‘87-88)					
FZR 1000	FCR 37,39,41	2-7/16” / Straight	Round / 5”	RU-0810	005-182
(‘89-95)					
FZR 1000	FCR 37,39,41	2-3/8” / Dual	Oval / 3”	RU-3092	005-340
(‘89-95)					

All applications require removal of stock airbox.

Application	Carb	Flange Dimension	Filter Dimension	K&N Part No.	Sudco Part No.
Harley Davidson					
Sportster / Big Twin'	VM,TM 38,39,41	2-7/16" / Straight	Round / 2"	RC-0850	005-100
	VM 40-44	2-3/4" / Straight	Round / 2"	RC-0920	005-101
	HS 40	2-1/8" / Offset	Round / Tapered	N/A	007-216
	chrome bonnet for above filter			N/A	007-215
XR 750/1000	VM,TM 38,41	2-7/16" / 10°	Oval / 7"	RU-1240	005-175
		2-7/16" / 20°	Oval / 5"	RU-1370	005-332
Norton					
Commando 750/850	VM,TM 34 Single Carb	2-1/4" / Offset	Round / 2-1/2"	RU-0650	005-185
	VM,TM 36,38 Single Carb	2-7/16" / Straight	Round / 2"	RU-0850	005-100
	VM,TM 32,34 Single Carb	2-1/4"		RU-0650	005-185
Triumph					
T120,T140,TR6,TR7	VM30,32,34	2-1/4" / Offset	Round / 1"	SU-305	005-111
	TM 24	1-3/4" / 10°	Round / 6"	RU-1050	005-124
Karts/Micro Sprints & Flat Track Bikes					
	VM,TM,PJ	2-1/4" / Straight	Round / 4"	RU-0600	005-113
	PWK 30-35	2-1/4" / 5°	Round / 5"	RB-0610	005-310
		2-1/4" / 6°	Round / 6"	RB-0620	005-320
	VM,TM,PJ	2-7/16" / 20°	Round / 4"	RU-1750	005-176
	PWK 36-41	2-7/16" / 20°	Round / 5"	RU-1760	005-177
		2-7/16" / 20°	Round / 6"	RU-1770	005-123
		2-7/16" / 10°	Oval / 7"	RU-1240	005-175
		2-7/16" / Straight	Round / 6"	RU-1000	005-328
		2-7/16" / 20°	Oval / 5"	RU-1370	005-332
	VM,TM,PJ,PWK 36-38	2-7/16" / Straight	Round / 6"	RU-0820	005-114
	VM 40, 44	2-3/4" / 10°	Round / 6"	RU-1470	005-126

K&N
AIR FILTER
AIR FILTER
PRECHARGER

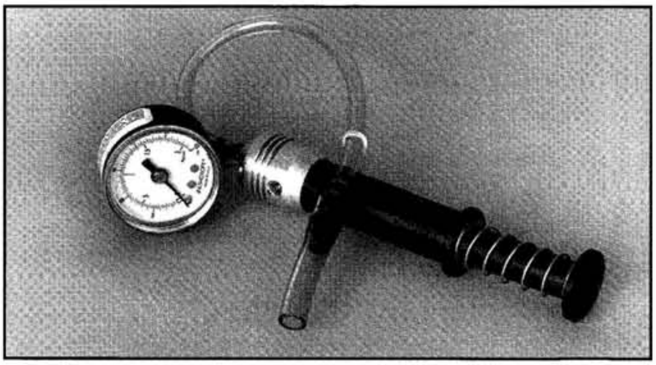
Accessories

Application	Dimensions	K&N #	Sudco #
PRE-CHARGERS Filter Wraps			
To fit these Filter Sizes	3.5"OD x 4" long	RU-0500PK	005-450
	3.5" OD x 5" long	RU-0510PK	005-452
	3.5" OD x 6" long	RU-0520PK	005-454
	4 cyl. Carb Bonnet		005-500
Crank Case Vent Filters	1/2" OD 2" OD x 1/2" L	62-1010	005-195
005-196	5/8" OD Rubber End Cap		62-1020
	3/4" OD	62-1030	005-197
K&N Filter Cleaner	32 OZ Squirt Bottle	99-0261	005-520
K&N Filter Oil	6-1/2 OZ Aerosol Can	99-0504	005-530
K&N Fuel Monitor	Round Face Type	85-2441	005-200

K&N FLAME ARRESTERS

Owners can experience the increased horsepower and the engine protection provided by the K&N unique oiled cotton gauze and epoxied screen filter element. In addition, the K&N Flame Arrestor is the only air filter approved by the U.S. Coast Guard for use as a flame arrestor. For high performance on the water no other product can match the "horsepower-per-buck" benefits of the K&N Flame Arrestor. Completely unaffected by moisture. Tested and approved.

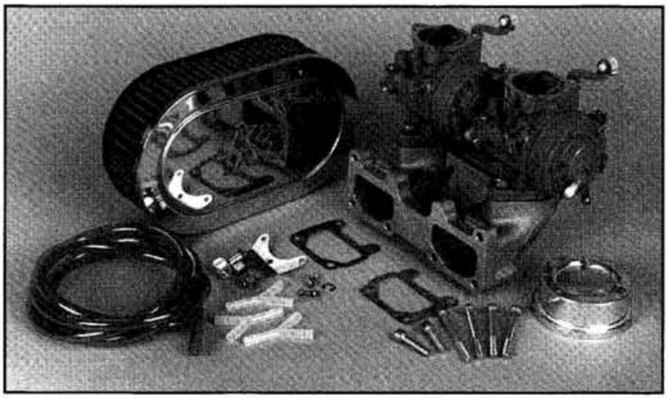
Year	Model	Order No.
BOMBARDIER		
All	Sea-Doo	**005-163**
All	Sea-Doo Si	**005-163**
91	Sea-Doo Twin	**005-163**
All	Sea-Doo GT	**005-163**
HOT SPORTS		
90	Jet N Cat 650XL	**005-166**
90	Jet N Cat 500	**005-166**
KAWASAKI		
All	JS300 Jet Ski	**005-166**
76	JS400 Jet Ski	**005-166**
77-90	JS440SX Jet Ski	**005-166**
82-85	JS550 Jet Ski	005-166
86-90	JS550 Jet Ski	005-166
91	JS550SX Jet Ski	005-166
86-90	JS650SX Jet Ski	005-166
91	JS650SX Jet Ski	005-166
87-91	650X2 Jet Ski	005-166
YAMAHA		
All	WJ500 Wave Jammer	005-166
All	WR500 Wave Runner	005-166
90-92	WR650 Wave Runner LX	005-166
90-92	WR650 Wave Runner 3	005-168
90-92	Super Jet	005-166
91	VXR650 Wave Runner	005-163
MIKUNI		
All	BN38, BN44 single (59-2000) Oval, 2" Tall	005-166
All	BN38, BN44 single (59-2860) Oval, 3" Tall	005-168
All	BN38, BN44 dual (59-2840) Oval, 2-1/2" Tall	005-167
All	BN38, BN44 dual JS440/550/650 (59-2830) Oval, 2" Tall	005-169
All	BN38, BN44 dual Yamaha Wave Raider 1100 (59-2040)	005-300



Pop-Off Pump

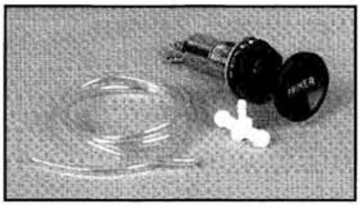
Mikuni's Pop-Off Test Pump Assembly, featuring a precision 30 or 100 p.s.i. dial gauge, allows for accurate testing and adjustment of pop-off pressure.

002-994 MK-BN-PMP with 30lb. gauge to test pop-off pressure.
002-993 MK-BN-PMP-100 with 100lb. gauge to test pop-off pressure.



Dual Linkage Kit

005-235 JS440/550 (BN38 Dual)



Sudco Primer Kits

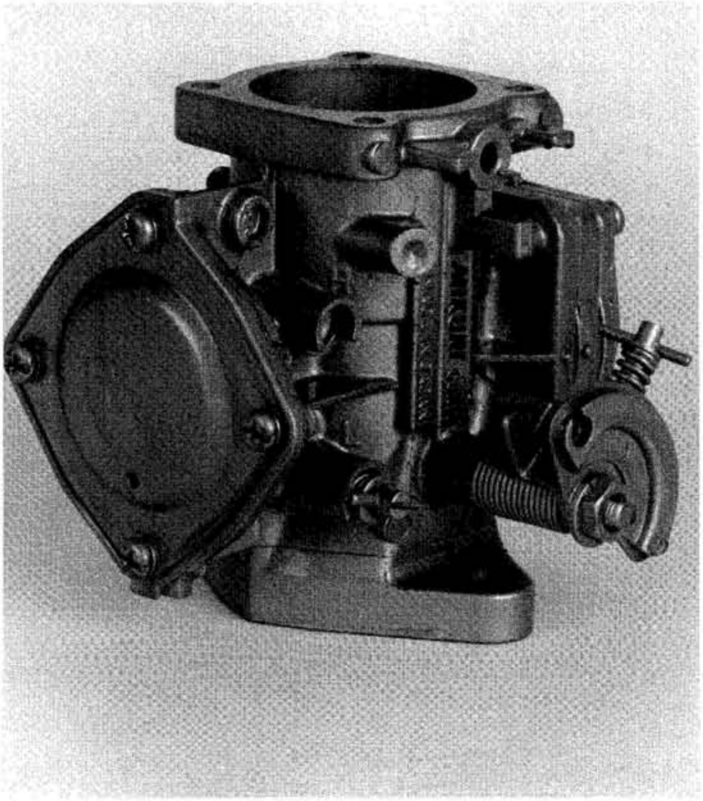
The primer kits are made of brass and include fuel lines and inline "T"s. Made in the USA.
002-995 Plunger Type pictured above left

Air Filter Adapters

Adapters come with stainless allen bolts.
005-085 3 Bolt Adapter

Restricter Jets

004-008 VM22/210 #30
004-009 VM22/210 #35
004-010 VM22/210 #40



Introduction to Super BN Carbs

The Super BN Carburetor for high performance applications is the latest in a series of watercraft carburetors from Mikuni. The Super BN earns its name because of the increased performance it delivers over previous Mikuni BN Carbs.

What differentiates the Super BN from previous BNs?

1). The fuel pump and jet sections are separate for easier maintenance.
2). It has an integral fuel filter.
3). The fuel pump capacity is increased by almost 20%.
4). Air flow is increased by 9%.
5). It is easily tuneable with replaceable jets (in a wide range of sizes) and an array of other tuning components.

With the introduction of the Super BN Series of carburetors, Mikuni American has made a renewed commitment to the watercraft industry by researching carburetor tuning applications and disseminating this information to the customer. In the past, jetting information was available through many different sources, but unfortunately, with as many different recommendations as there were sources. With this manual, Mikuni American is able to provide a more reliable and consistent source of approved technical information.

Carb Installation

CAUTION: Exercise care when changing carburetion components and any time you work with the fuel system on your watercraft. Work in a well ventilated area. Do not engage the starter while fuel lines are disconnected. Immediately clean up any fuel spill that might occur during carb installation.

A: As when installing any performance product, a degree of mechanical ability is required. If after reviewing the parts and instructions you don't feel that you can properly complete this installation, take your watercraft to a competent professional. Proper installation and adjustment will save time, money and aggravation.

B: In most cases your new Super BN Carburetor will be installed in conjunction with an aftermarket manifold and flame arrestor/air filter system. We recommend using this manual, together with the applicable shop manual for your watercraft, and the instructions from the aftermarket manifold manufacturer to help you with the installation and tuning of the Super BN Carburetor.

C: Super Bn carbs were designed to, and work best, in the down draft position. Many tuners choose to mount Super BNs in more of a side draft position. This will work okay, as long as the carbs are oriented with the pump on top and the regulator portion down, otherwise the jet portion will constantly drain into the carb making calibration impossible.

D: How to determine the correct carb size to use.

The following recommendations are for performance applications:

Piston port and reed valve twin cylinder engines

1).	Up to 80 hp	SBN 44
2).	Up to 90 hp	SBN 46
3).	90 hp and up	Dual SBN 38, 44 or 46's

Rotary valve engines

1).	Limited class	SBN 44/46's or dual SBN 38's
2).	Mod class	Dual SBN 44/46's

Three cylinder engines

1).	Limited class	Three SBN 38's
2).	Mod class	Three SBN 44/46's

E: All Applications

1). Use a new gasket between the carb(s) and the intake manifold.

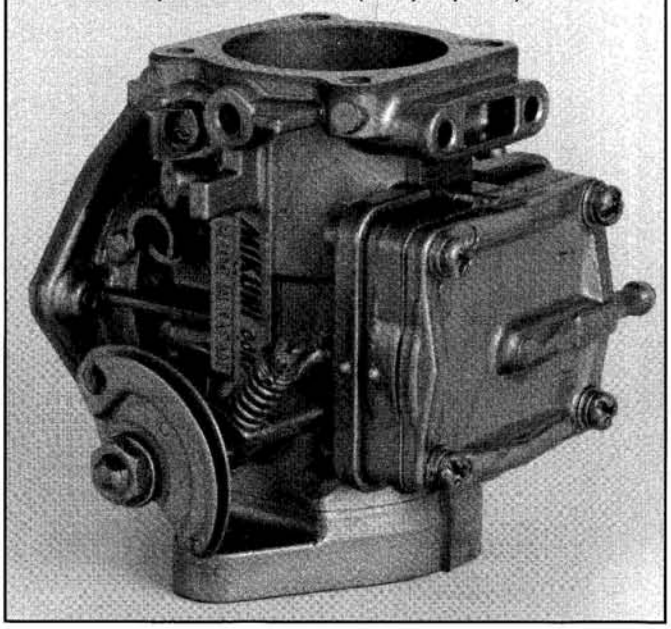
2). Use flat washers and self-locking nuts to secure the carb(s).

3). Be sure that the fuel lines are of the correct diameter for the carb fittings. Secure all hose connections with cable ties or hose clamps.

4). If the primer fitting is not being used, plug or cap the fitting.

5). When installing the throttle cable, be sure to securely tighten the jam nuts. Allow free play at the throttle lever. Make sure that the throttle cable is not pulled open as the handlebars are turned from side to side; correct the cable routing if necessary.

Mikuni Super BN46 Carburetor (Fuel pump view).



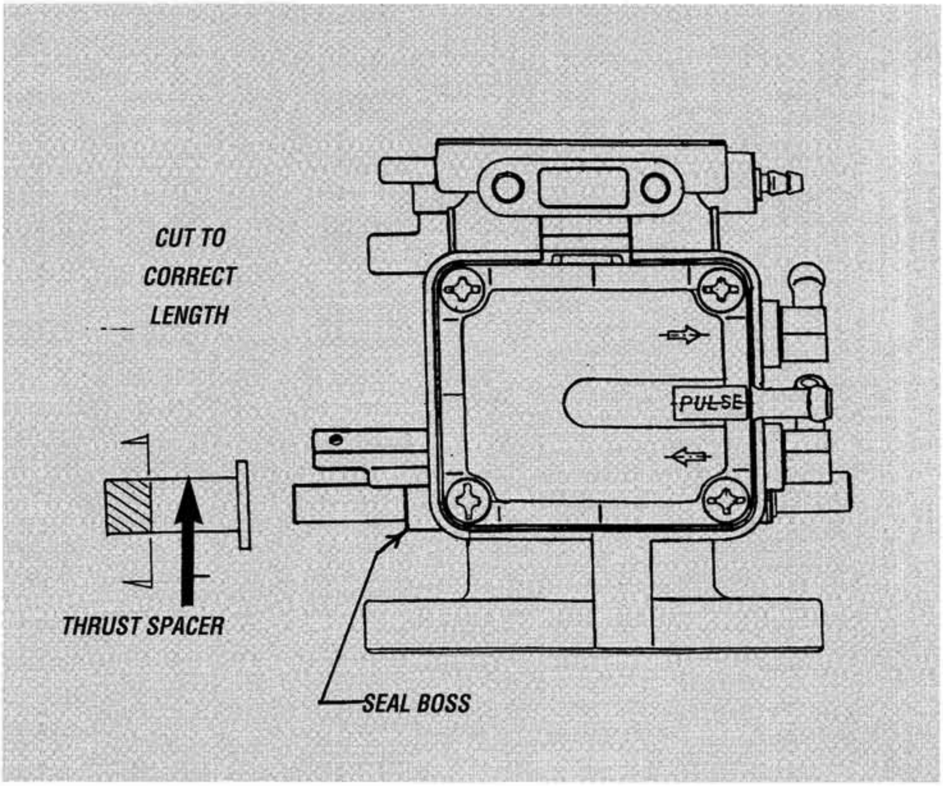
F: Installing Dual Super BN Carbs

The only Super BN carbs that are factory prepared to be used as duals are the BN38-34-8075, 8076. Several other models have extended throttle shafts to make them easier to use as duals; one of the carbs will need to be modified slightly prior to use. The modification consists of removing the throttle lever, idle stop, spring and sleeve, and then cutting the threaded shaft end to the desired length.

After removing the above mentioned parts, place both carbs on the manifold and cut enough of the threaded end of the shaft to allow one eighth inch (0.125") clearance between the shaft ends: Be sure to chamfer the sharp edge.

A Mikuni coupling kit, MK-BN/001, is recommended to connect the two carbs together and synchronize them.

NOTE: The sleeve that was removed from the carb is actually a thrust spacer and must be used with the coupler. The sleeve should be shortened to the correct length and placed between the end of the coupler and the seal boss (see illustration) to prevent the shaft from moving side to side; this movement can cause damage to the throttle valve.



G: SYNCHRONIZING DUAL CARBS

1). Place the coupling on the throttle shaft between the carbs and secure the carbs to the manifold.

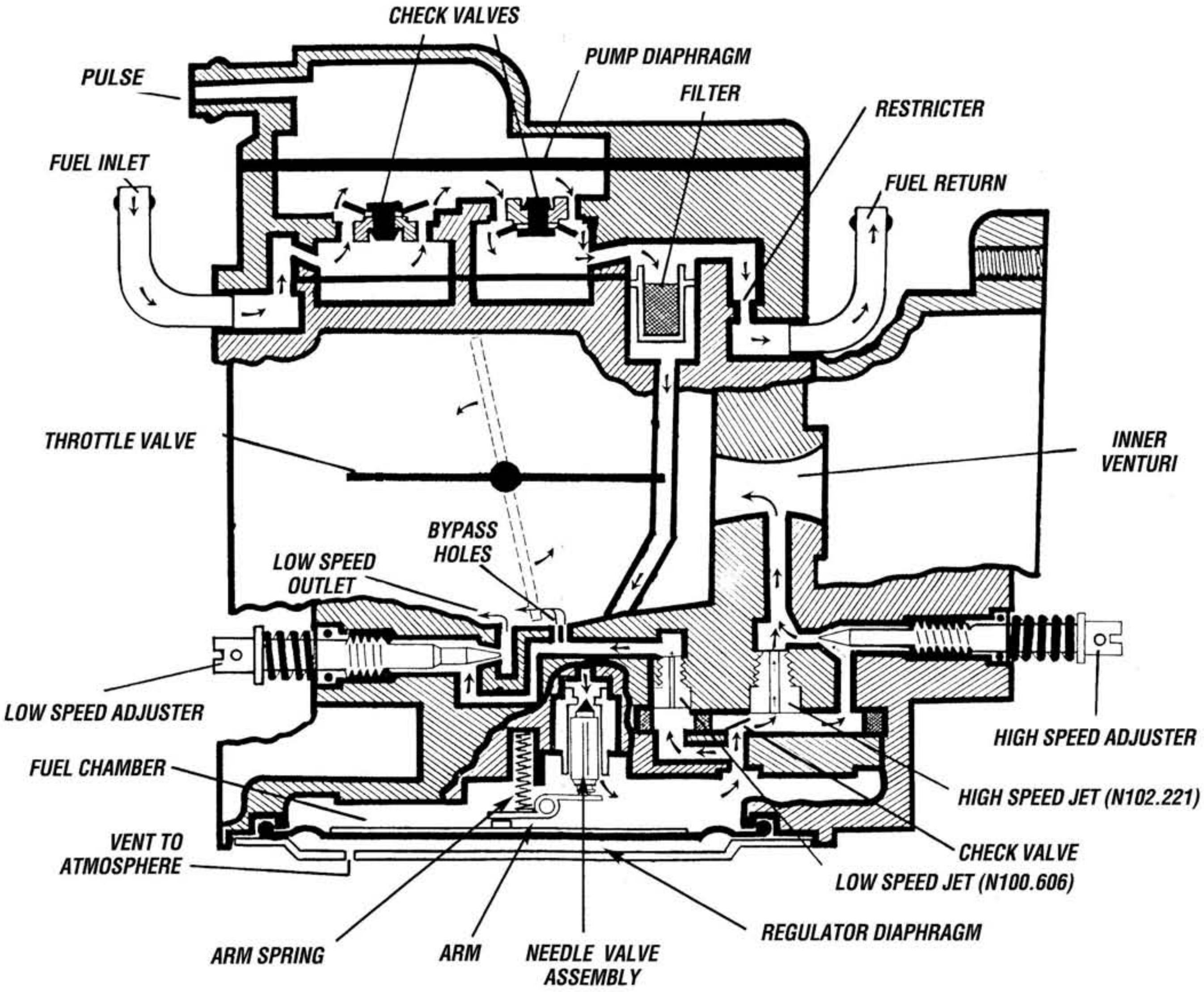
2). Back out the idle stop screw until it no longer contacts the throttle linkage.

3). Position the coupling between the carbs, against the shortened sleeve, and securely tighten the set screws on one end only.

4). Use the eraser end of a pencil or similar blunt object to push and hold the throttle valve closed in the carb without a return spring. With the throttle valve held closed, tighten the remaining screws.

5). Adjust the idle stop screw for the desired idle speed.

MIKUNI SUPER BN INTERNAL COMPONENTS


CHECK VALVES
PUMP DIAPHRAGM
PULSE
FILTER
RESTRICTER
FUEL INLET
FUEL RETURN
THROTTLE VALVE
INNER VENTURI
BYPASS HOLES
LOW SPEED OUTLET
LOW SPEED ADJUSTER
HIGH SPEED ADJUSTER
FUEL CHAMBER
HIGH SPEED JET (N102.221)
VENT TO ATMOSPHERE
CHECK VALVE
LOW SPEED JET (N100.606)
REGULATOR DIAPHRAGM
ARM SPRING
ARM
NEEDLE VALVE ASSEMBLY

Cutaway Drawing

Use the cutaway drawing (above) to learn about the inner workings of the Super BN carburetor. Starting with the fuel pump, fuel enters through the fuel inlet, being drawn in by the engine's pulse acting on the pump diaphragm. The fuel passes through a series of check valves and then the fuel required by the engine passes through a fuel filter. Excess fuel is diverted through a restricter and then back to the fuel tank via the fuel return. The purpose of the fuel restricter is to act as a fuel pressure regulator for the fuel pump.

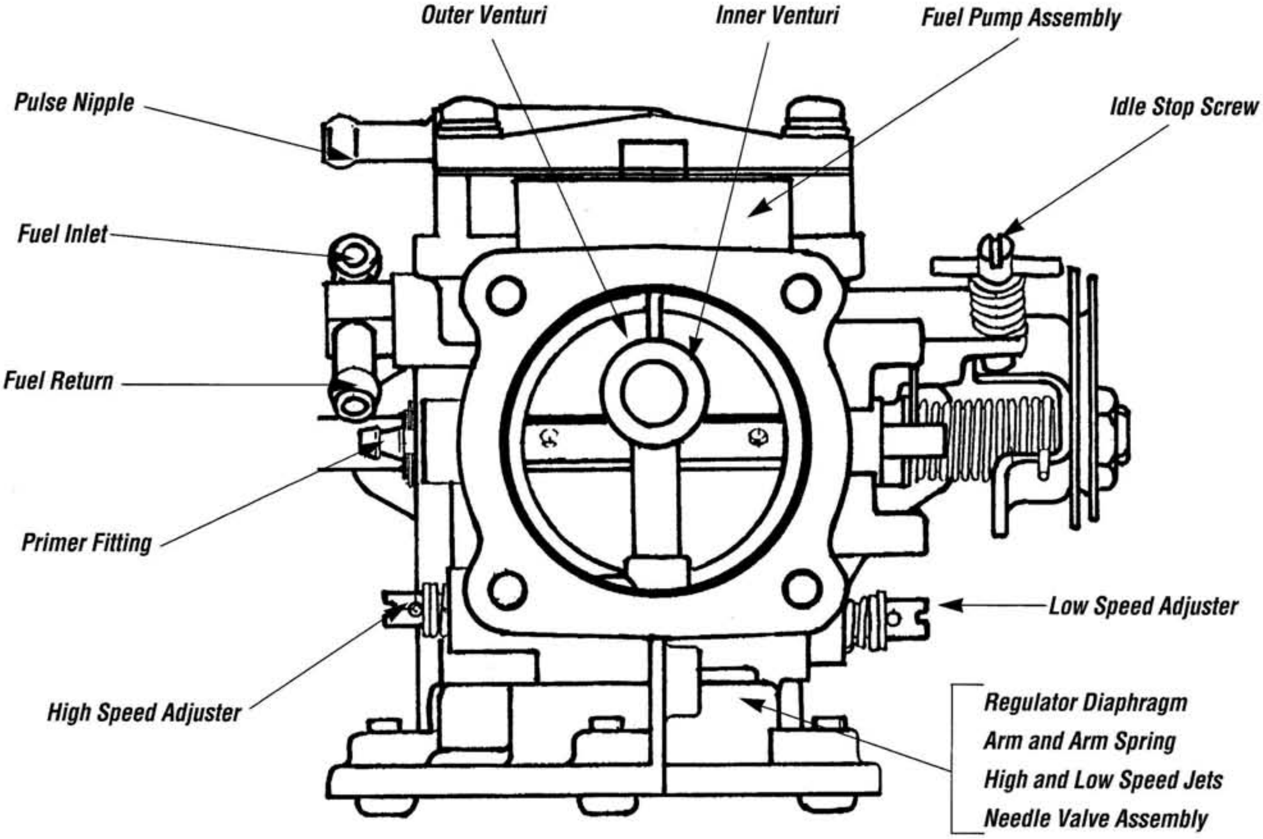
After the fuel passes through the filter it goes directly to the needle valve assembly and then into the fuel chamber. Fuel flow into the fuel chamber is controlled by the regulator diaphragm, arm spring, arm and the vent to atmosphere. These components, along with the needle valve, make up the regulator portion of the Super BN. As you will learn, the Super BN is part carburetor and part fuel regulator. The regulator portion controls fuel flow at lower speeds, idle to 1/4 throttle, and the carburetor portion controls fuel flow from about 1/4 throttle to full throttle.

At idle, fuel is drawn through the low speed jet to the low speed outlet, via the low speed adjuster, and to the bypass holes. The low speed adjuster controls fuel flow for a smooth idle and initial throttle response. As the throttle valve is opened from the idle position, the bypass holes are increasingly exposed to the air flow. Their function is to help the carburetor "transition" from low speed to high speed operation. The size of the low speed jet directly affects fuel flow through the bypass holes for low speed performance. The other function affecting low speed performance is the regulator portion of the BN.
The regulator portion can be tuned by changing the arm spring tension or the size of the needle valve, or both. More of that later.

As the Super BN transitions to its high speed fuel circuit, at about 3/8 throttle, fuel is drawn through the check valve, and initially through the high speed jet. The function of the check valve is to prevent the low speed circuit from sucking in air through the high speed circuit at throttle openings of less than three eighths. Fuel from the high speed jet passes through the inner venturi then into the engine. The high speed adjuster controls the maximum amount of fuel flow for full throttle performance from about 3/4 throttle opening.

For a closer look at the contribution of each tuning circuit refer to the Fuel Flow Chart towards the back of this manual.

MIKUNI SUPER BN EXTERNAL COMPONENTS



Principles of Carburetion

Fuel Regulator Portion

Because the Super BN is a watercraft carburetor, it cannot vent its fuel chamber to the atmosphere like a carb with a float system; this would cause fuel leakage into the hull in the case of a roll-over. The Super BN's fuel chamber is contained by the regulator diaphragm, with fuel on one side and atmospheric pressure on the other.

As the fuel in the chamber is drawn in by engine suction, the diaphragm moves in response to the depletion of fuel and the effect of atmospheric pressure pushing against it. The diaphragm contacts and moves the needle valve arm allowing fresh fuel to enter the fuel chamber. As fuel enters the fuel chamber it is being pushed in under pressure from the fuel pump with enough force to push the diaphragm back against the atmospheric pressure. When the fuel chamber is once again filled, the diaphragm relieves the pressure on the arm and the needle valve closes. In this way, the diaphragm mechanism precisely regulates the amount of fuel in the fuel chamber.

Once again, the regulator portion of the Super BN primarily affects tuning at throttle openings of 1/4 or less in response to the engines high manifold pressure. The regulator portion of the BN carbs is a tuneable component and can be adjusted to most any engine configuration. The terms most commonly used in this adjustment is "Pop-Off" pressure.

Pop-off is a relative term, it refers to the pressurization of the needle valve with compressed air, through the fuel inlet, and noting the pressure necessary to open the needle valve or "pop" it off its' seat. The higher the pressure that is required indicates a higher pop-off.

Carburetor Portion

The Super BN starts performing like a conventional carbs as the throttle is opened through and past 1/4 in that is uses replaceable jets and adjuster screw to make changes in calibration. At or beyond 1/4 throttle opening, the engine replaces manifold pressures with air velocity.

What is the difference between manifold pressure and air velocity? Manifold pressure is the suction generated by the engine against a very restrictive mechanism within the carb: The closed or nearly closed throttle plate. As the throttle is opened, the carb transitions from being controlled by the regulator portion to responding as a normal carb does.

High air velocity, created by the engine as it revs up, appears as a strong suction (or low pressure) within the carb body. Fuel flow through the carb is caused by the differential in pressures between the positive atmospheric pressure on the diaphragm and the suction within the carb body. Because air velocity creates such a strong suction, pop-off pressure has virtually no affect on calibration past about 1/4 throttle.

Accurately tuning a Super BN, for any application, requires a basic understanding of its functions and adhering to a few basic rules. Most importantly, you can only expect the carb to work as well as your engine does; the performance of your Super BN cannot make up for a weak or worn out engine.

Another point to stress here is that you may not be able to achieve maximum performance from your watercraft simply by changing jets in your Super BN. A mismatch of engine components and or porting may create a carburetion nightmare. The best advise is to use quality parts and service from reputable dealers.

To achieve an accurate calibration with a Super BN you should adjust the tuneable circuits in the following order:

1. LOW SPEED ADJUSTER - To adjust a smooth idle.
2. POP-OFF PRESSURE - Just off idle to 1/4 throttle in conjunction with the low speed jet.
3. LOW SPEED JET - Just off idle to1/3 throttle.
4. HIGH SPEED JET - 1/3 to 3/4 throttle.
5. HIGH SPEED ADJUSTER - 3/4 to wide open throttle.

The reason for adjusting the circuits in this order is because several circuits contribute to the total fuel delivery of the carb. Changing the low speed jet for example, affects wide open throttle fuel delivery to some degree, ref. Fuel Flow Chart.

The exceptions to the rule are the low speed adjuster and the regulator portion: The low speed adjuster has no effect past 1/3 throttle. The regulator portion has no tuning effect past 1/4 throttle, although it continues to control the fuel supply.

Idle Stop Screw

The idle stop screw is used to adjust the idle speed (rpm) by opening or closing the throttle valve. Refer to your watercraft owners manual for the correct idle speed. As a rule of thumb, adjust the idle speed to approximately 1100 rpm.

Low Speed Adjuster

The low speed adjuster is used in conjunction with the idle stop screw to adjust and maintain idle speed and smoothness. Experiment turning the low speed adjuster in and out in small increments until a smooth idle is obtained. As the idle stop screw is turned in or out to raise or lower idle speed the low speed mixture is also affected.

For clarification, if the idle stop screw is turned out to lower idle speed, this action increases manifold pressure slightly and richens the low speed mixture so that a mixture adjustment may be required. The low speed adjuster is very sensitive and adjustments should be made in small increments only.

NOTE: Remember, the low speed adjuster is only for adjusting the idle mixture. If you use the adjuster to help get rid of a low speed hesitation, you will probably find that your engine will load up in no wake zones, or after extended idling.

Pop-off pressure and low speed jet - How do pop-off pressure and the low speed jet work together?

These two circuits overlap, although the low speed jet continues past 1/4 throttle where pop-off pressure has little to no effect. In general, if your pop-off pressure is slightly too high, you can compensate by increasing the size of the low speed jet. The opposite is also true; if the low speed jet is slightly too small, you can compensate with less pop-off pressure. Once you get to the point where you think each is adjusted correctly, it's best to try varying the two to make certain you have the best combination. For example: If you have pop-off pressure of 30 psi. and a 67.5 low speed jet, you should also try a pop-off of say 35 psi. and a 70 low speed jet.

To verify that you have the correct combination there are two things to test:

1. Throttle response should be crisp, with no hesitation.

2. Ride the boat at a constant 1/4 throttle opening for about 1 minute and then quickly open the throttle fully, there should be no hesitation and the engine should not show signs of being loaded up. If it hesitates, it's lean; if it's loaded up, it's rich. The first test is to check pop-off pressure,the second test is for checking the correctness of the low speed jet size.

Take the time to ride the boat slowly and thoroughly test your jetting changes. After a jet change, it takes the engine a few minutes of use to completely respond to the change.

When does it become necessary to adjust pop-off?"

When personal watercraft come from the factory they have fairly high pop-off due to the fact that they also have somewhat restrictive air intake systems that cause the engine to generate very high manifold pressures; the higher the manifold pressures, the higher the pop-off pressure required to properly regulate the fuel delivery to the engine.

As you modify or change your watercraft's flame arrestor to a less restrictive type you will most likely start to experience a lean hesitation caused by a decrease in manifold pressure. This change will require an adjustment in pop-off pressure to regain crisp throttle response. Because most aftermarket flame arrestors are less restrictive than stock, you will need to decrease pop-off to compensate.

The Super BN carbs that come from Mikuni American are already set up for performance applications, and come with pop-off settings lower than the carbs that come as original equipment.

Pop-off pressure, (the regulator portion of the Super BN) is a tuneable component of the Super BN and works in conjunction with the low speed jet for good initial throttle response. The components that make up the regulator portion of the Super BN are:

1. Needle Valve, available in 4 sizes, 1.5, 2.0, 2.3 and 2.5
2. Arm Spring, available in 4 sizes, 115 gr., 95 gr., 80 gr. and 65 gr.
3. Arm
4. Regulator Diaphragm

The arm has a limited range of adjustment; from the arm being level with the adjacent carb surface to being bent upwards no more than .040" (1mm) above that surface. If the arm is bent upwards too much, it can cause the needle valve to be held open when the diaphragm and cover are installed. If the arm is bent down, its movement becomes limited and may not be enough to allow the needle valve to open fully.

MIKUNI SUPER BN TUNING

Adjusting pop-off pressure

Pop-off pressure is adjusted by replacing the arm spring with one of a different gram rating. Sometimes, in order to achieve the desired pop-off pressure, it is also necessary to change the needle valve size; keep in mind that it's always best to use the smallest needle valve size to obtain the correct pop-off pressure.

Measuring pop-off pressure

You can measure pop-off pressure with a "Pop-off" pump, available from Mikuni through your dealer, or you can get a relatively good indication of pop-off pressure by simply using the needle valve and arm spring guide in this manual. Pop-off pumps are available in three ranges: 0-30psi., 0-60psi. and 0-100psi.. For most performance applications the 0-30psi. pump is appropriate.

Pop-off pressures, in psi., from needle valve size and arm spring combinations:

	Pop-Off Arm Spring (color & strength)			
	Gold	Dull Silver	Black	Shiny Silver
Needle Valve Size	115 grams	95 grams	80 grams	65 grams
1.5	55 psi.	43 psi.	38 psi.	32 psi.
2.0	32 psi.	25 psi.	21 psi.	18 psi.
2.3	22 psi.	20 psi.	17 psi.	15 psi.
2.5	19 psi.	17 psi	14 psi.	12 psi.

Checking pop-off with a pop-off pump/ gauge

1). Attach the pump to the fuel inlet nipple.
2). Cover, or in some way plug the fuel return nipple.
3). Remove the regulator diaphragm to observe the needle valve.
4). During testing, it is important to obtain consistent readings. To accomplish this, it is necessary to keep the needle valve wet. Use WD-40 or something similar to wet the needle valve. NOTE: Don't use gasoline because of the fire hazard. Protect your eyes from the spray when the needle pops open.
5). Pressurize the carb with the pump until the needle valve pops open, being careful to note the indicated pressure. Test the valve 3 times to assure an accurate reading.

An indication that your pop-off needs to be adjusted is a lean hesitation when you open the throttle from idle; in the extreme, the engine may even die. It is much easier to detect a lean pop-off than it is a rich one, so it is wise to adjust your pop-off until you get it too lean and then back up until the lean hesitation disappears.

NOTE: It is recommended that you do not use too large a needle valve for your application. Many tuners recommend using a 2.3 or 2.5 needle valve in all cases. Actually, we recommended using the smallest needle valve that gives you the correct pop-off pressure for your engine. A 1.5 needle valve can flow the maximum amount of fuel that the Super BN can pump, so the only reason to use a large needle valve is to obtain the correct needle valve and arm spring combination (pop-off) for your watercraft.

High Speed Jet / Throttle Position and Jetting

The high speed jet begins contributing fuel at about 3/8 throttle, overlapping the low speed jet. The high speed jet is the primary tuning component from 1/2 to 3/4 throttle. As you have probably noticed, tuning circuit operations are denoted in fractions of throttle openings.. the reason for this is simple: Carb jetting does not relate to engine rpm or the boat's speed, it only recognizes how far the throttle has been opened; each circuit of the carb responds in turn. This is why it's very important, when trying to diagnose a carb problem, that you identify at which throttle opening the problem occurs, in order to adjust the appropriate circuit.

The procedure for testing for the correct high speed jet size is the same as for the low speed, except that you should now hold the throttle at a constant 1/2 open for one minute, then quickly open the throttle fully to check engine response. If the engine hesitates, the carb is lean. If the engine takes a second or two to clear out and then accelerate, the carb is too rich. In either case, make the appropriate jet change and do the complete test again.

High Speed Adjuster

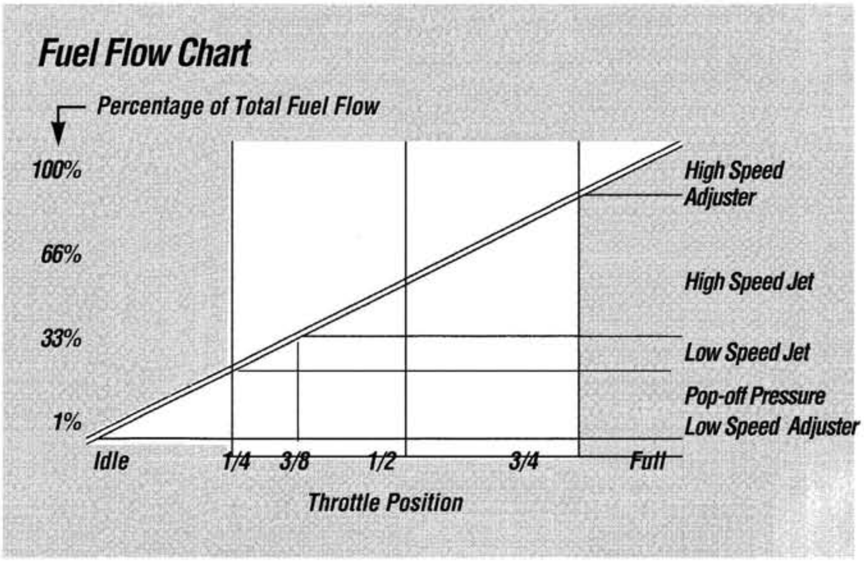
The high speed adjuster is the last circuit to adjust. It primarily controls fuel delivery from 3/4 throttle to wide open throttle. Turning the screw clockwise reduces fuel flow, counter clockwise increases fuel flow.

The maximum fuel flow is achieved at three turns out from closed.

To test the high speed adjuster it is recommended that you start with a fresh set of spark plugs, to get quicker plug readings. Unless you have an exhaust gas temperature gauge, you will have to rely on plug readings.

You will need to be in an area where you can hold the throttle wide open for several minutes then chop the throttle and stop the engine just prior to removing the plugs to read them. Ideally, you're looking for a nice brown color on the electrode.

Another indicator of proper adjustment is a maximum rpm reading on a tachometer. If the carb is lean or rich, it won't pull as high an rpm reading as when it's right on.



Super BN Specifications

Carb	Low Speed Jet	High Speed Jet	Needle Valve	Arm spring (grams)	Low Speed Adjuster	High Speed Adjuster	Choke or Primer	Color
BN46-42-8002#	120	150	2.5	80gr.	1.0	1.5	Primer	Silver
BN44-40-8067#	120	140	2.5	80gr	1.0	1.5	Primer	Silver
BN44-40-8052#	100	125	2.3	65gr.	1.0	1.5	Primer	Black
BN44-40-43	120	115	1.5	115gr.	1.0	.75	Choke	Black
BN38-34-8113#	65	107.5	2.0	115gr.	1.0	1.5	Primer	Silver
BN38-34-55-D	65	107.5	2.0	115gr.	1.0	1.5	Choke	Black
BN38-34-8075*	65	107.5	2.0	115gr.	1.0	1.5	Primer	Black
BN38-34-8076*	65	107.5	2.0	115gr.	1.0	1.5	Primer	Black
BN34-28-8010	77.5	80	1.5	165gr.	1.25	.75	Choke	Black

# Denotes carbs that have extended throttle shafts and can be coupled together as duals.
*** Denotes carbs that are designed to be used as a set and can only be used as duals.**

Performance Tips - The "Left Turn Syndrome"

You will find in all instances that your watercraft will turn more easily to the right than to the left. The reasons are basically simple. First, engine torque constantly places pressure on the hull to turn right.

If your engine's performance is marginal, you can notice a dramatic fall-off in power in a hard turn. This power fall-off can't always be blamed on the engine, Being over-propped can also cause the engine to slow enough to fall off its' power peak. An engine with a peaky power curve is especially susceptible to a very dramatic power loss in a hard left turn.

Most recently, with the increase of Sportabout racing, there has been a marked improvement in hull design with a dramatic increase in "G" forces encountered while turning: over 2.5 G's. In some instances, such a hard turn can cause a momentary loss of power due to fuel starvation in the carbs. Jetting changes cannot correct this situation, the best solution is to rotate the mounting of the carbs 90°, so that their throttle shafts are perpendicular to the crankshaft axis rather than parallel. To date, this solution to the problem has been 100% successful.

Fuel Dripping from the Inner Venturi at idle

This situation occurs periodically and is easy to cure. What causes this problem is a combination of two things. First, low pop-off pressure (due to installation of a 2.5 needle valve with a light spring pressure) together with an engine that has a substantial vibration at idle

The engine vibration causes the needle valve to leak, which causes the engine to run even rougher. You can view this occurrence by carefully looking into the throat of the carb at idle, you will be able to see the fuel dripping from the inner venturi. In this same way you can also check to see that the problem is corrected. The cure for the problem is to increase pop-off pressure until the dripping stops.

Engine hesitation when accelerating after a high speed deceleration

You may find it desirable to increase the number of anti-siphon valves (part no. BN34/107), If you ride very fast and find that you have a noticeable stumble when re-opening the throttle after a long, high speed deceleration. This is caused by excess fuel in the carb.

The engine revs fairly high while decelerating, but it uses very little fuel. The fuel pump still pulses hard, but there is no demand for the fuel. A small amount of fuel will overfill the fuel chamber, leak through the high speed circuit and get deposited on top of the closed throttle valve. This fuel causes a momentary rich condition when the throttle is re-opened.

The solution is to use one or two additional anti-siphon valves. Never use more than two extra, and recheck your calibration after installing any extra valves; in some cases extra valves can adversely affect throttle response.

MIKUNI SUPER BN TOUBLESHOOTING GUIDE

Problem	Possible Cause	Correction
Hard starting	Incorrect use of primer	Review primer operation
	Fuel lines improperly connected	Reconnect in correct sequence
	Intake air leak	Check manifold connections
	Ignition problem	*Repair or replace as necessary
	Low cylinder compression	*Repair or replace as necessary
	Idle speed set too low	Adjust idle speed according to specifications in owners manual
	Clogged idle circuit	Remove carb and chemically clean
	Improper adjustment of low speed adjuster	Adjust low speed adjuster for a smooth idle
Slow return to idle	Idle speed set too high	Adjust idle speed according to specifications in owners manual
	Throttle linkage sticking	Clean and inspect linkage, lubricate, repair or replace as necessary
	Throttle cable sticking	Correct routing or replace as necessary
Engine idles but won't rev up	Pop-off pressure too high or low speed jet too small	Adjust pop-off or low speed jet per manual
Engine "loads up" during extended idling, i.e., in 5 mph zones	Leaking anti-siphon valve	Replace valve
	Leaking needle valve	Clean or replace needle valve
	Pop-off pressure too low	Increase pop-off pressure - see page 83
	Low speed jet too large	Replace low speed jet with smaller size jet
Engine surges when cruising at constant throttle setting	Incorrect air/fuel mixture	Mid range - change low speed jet High speed - readjust high speed adjuster
Engine does not develop full power or misses during acceleration	Clogged air cleaner/flame arrestor	Clean as necessary
	Throttle not synchronized (Dual carb applications)	Re-synchronize carbs
	Clogged fuel filter or water separator	*Clean as necessary
	Components loose in carb, i.e., jets	Tighten as necessary
	Ignition problem	*Repair or replace as necessary
	Low cylinder compression	*Repair or replace as necessary
Carburetor is too lean at full throttle and turning out high speed adjuster has no effect	Needle valve size is too small for engine needs	Replace needle valve with larger size
	High speed jet too small	Replace jet with larger size
	Carburetor too large for engine	Use more restrictive flame arrestor or smaller carb

*Refer to Shop Manual for your craft.

MIKUNI SUPER BN

MIKUNI
SUPER BN
CARBURETORS
PRIMER

MIkuni Super BN44/46 Performance Single Carb Kit for Kawasaki JS 650/750

Mikuni American is making available it's popular high performance carburetors for the personal watercraft market, the Super BN Series, in a complete induction kit for Kawasaki's popular JS650/750 Jet Skis. Mikuni Super BN Carburetors provide increased air flow and fuel flow over stock for the increased demands of racing. These single carb kits for the JS 650/750 are available in 44mm and 46mm throttle bores to match displacement size and performance modifications. Kits come complete with a high performance aluminum intake manifold, installation hardware, alloy Mikuni Velocity Stack with high capacity K&N Flame Arrestor, Mikuni foam filter stock, and a Primer pump for easy starting. Mikuni Super BN Performance Carburetor Kits are available from your local water craft dealer or MIkuni products distributor.

Super BN Carburetors

001-096 **BN44-40-8067** Performance single 44mm for most sit-down models requiring larger jets. Features a Viton 2.5 needle valve, #120 pilot (slow) jet, #140 main (high) jet, no butterfly choke, and instruction manual.

001-091 **BN38-34-8113** Performance single 38mm to replace most standard BN or Super BN carbs. Features a Viton 2.0 needle valve, #65 (slow) jet #107.5 main (high) jet, no butterfly choke and instruction manual.

Mikuni BN Carburetor Parts & Kits -

Carburetor Rebuild Kits

The rebuild kit contains all the necessary O-rings, gaskets, check valves, diaphragms, washers and springs to completely rebuild your carb and make it run like new again.

025-650 For standard BN series (38mm, 44mm)
025-651 Super BN

MIKUNI
GENUINE COMPONENTS
8910 MIKUNI AVENUE • NORTHRIDGE, CA 91324

MK-BN38/44 Rebuild Kit for BN34, BN38, and BN44 Carbs - "Round Pump"

Part No. 025-650

Idle Mixture Screw - BN 44 only
Tightening this screw decreases the clearance and reduces the fuel flow rate. Turn screw in steps of 1/8 turn.

Low Speed Mixture Screw
This controls fuel flow for the low speed range. Fuel flow is controlled in the same manner as the idle mixture screw.

High Speed Screw
this screw controls fuel flow for the intermediate and high speed range. Fuel flow is controlled in the same manner as with the idle mixture screw.

Needle Valve Kit - Upgrade "Round Pump Only"

007-330 Includes N/V assembly with viton tip and spring (NV 786-15008 2.5 & BN38/86, T-spring)

Needle Valve Assembly

(Round Pump)

Steel Tip

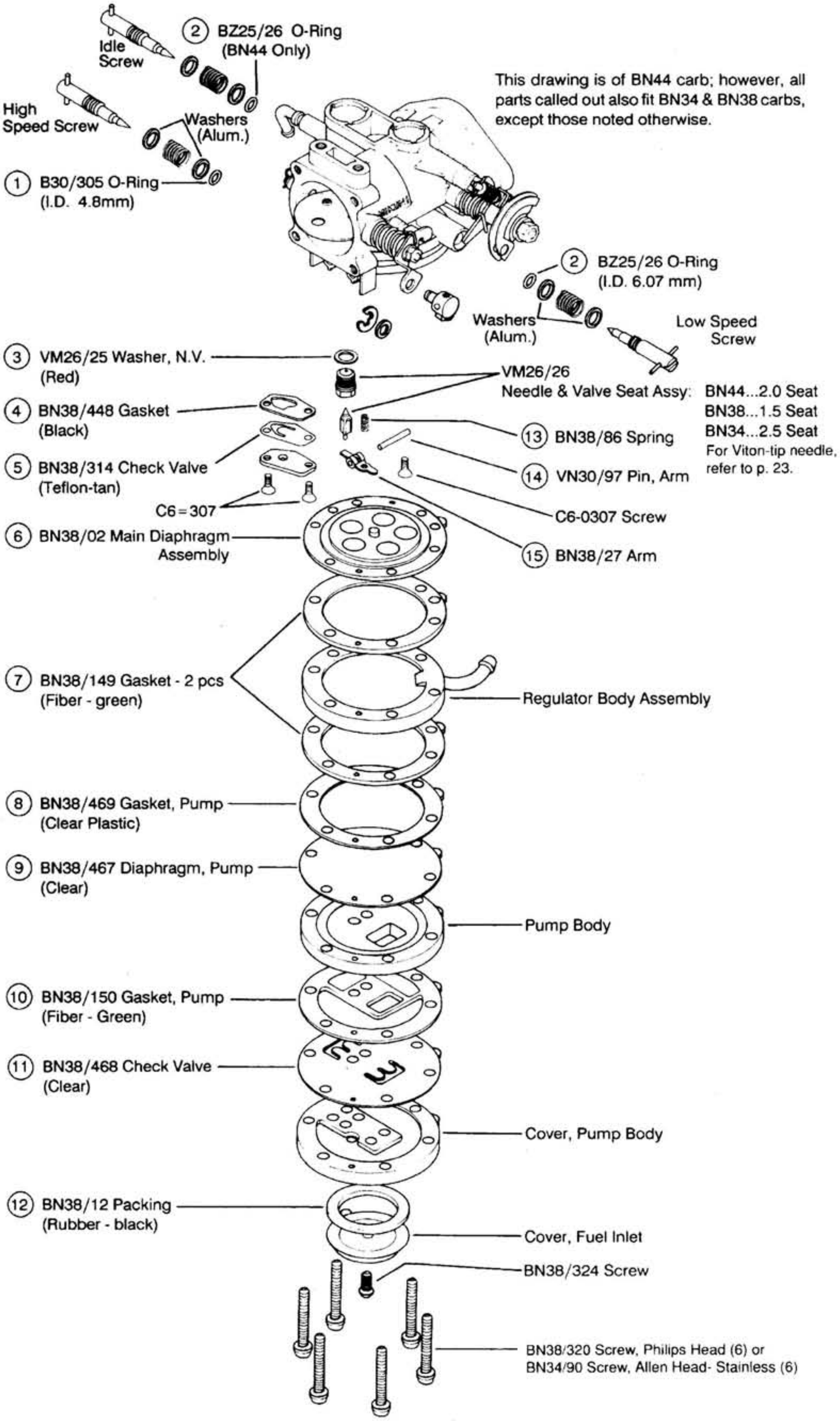
002-230	VM26/26	1.0
002-231		1.5
002-189		2.0
002-190		2.5
002-191		2.8

Needle Valve Assembly

Viton Tip

002-890	786-15005	1.5
002-891		2.0
002-892		2.5

MIKUNI BN EXPLODED VIEW



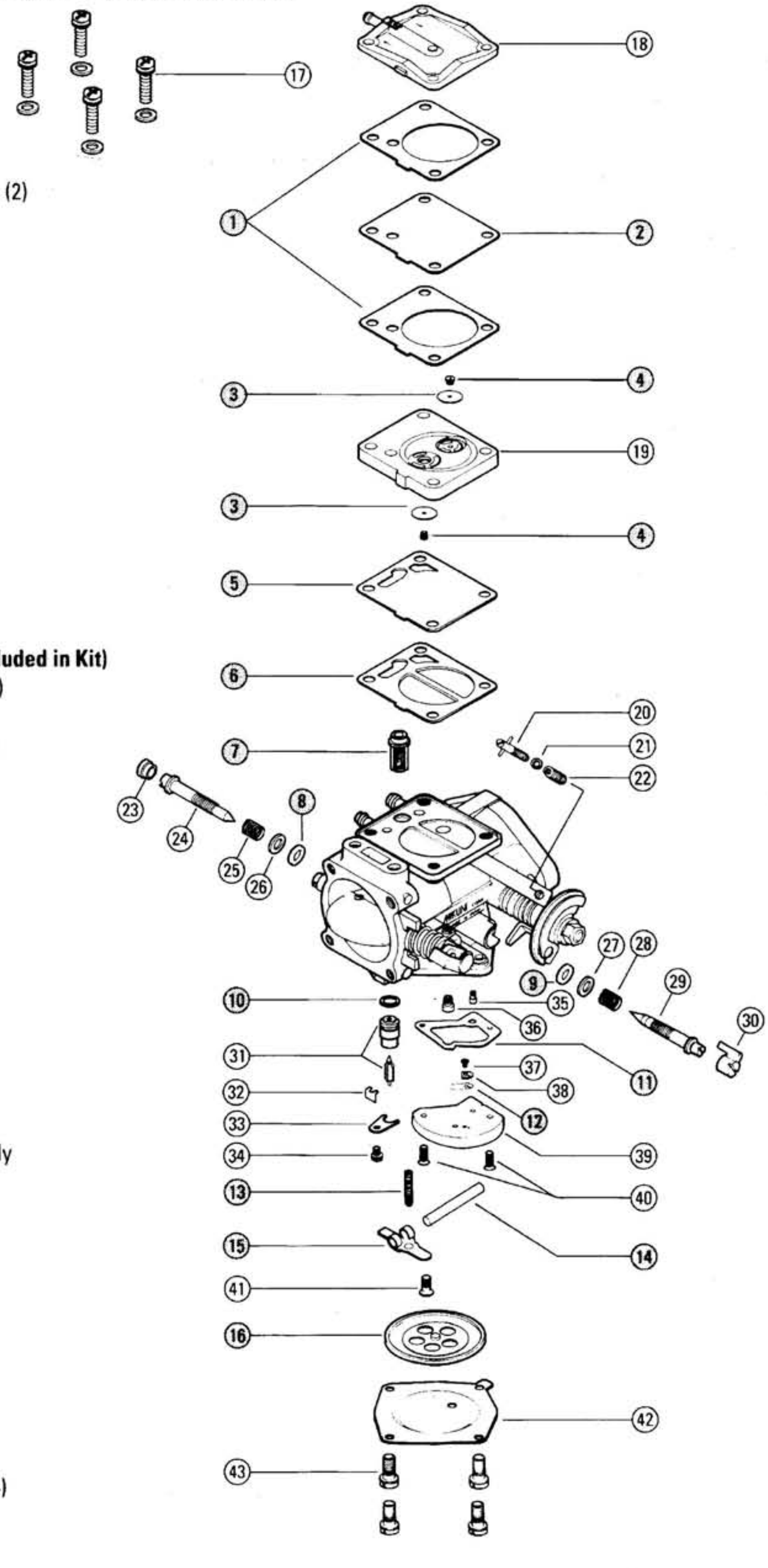
This drawing is of BN44 carb; however, all parts called out also fit BN34 & BN38 carbs, except those noted otherwise.

Idle Screw
② BZ25/26 O-Ring (BN44 Only)
High Speed Screw
Washers (Alum.)
① B30/305 O-Ring (I.D. 4.8mm)
② BZ25/26 O-Ring (I.D. 6.07 mm)
Washers (Alum.)
Low Speed Screw
③ VM26/25 Washer, N.V. (Red)
VM26/26 Needle & Valve Seat Assy:
BN44...2.0 Seat
BN38...1.5 Seat
BN34...2.5 Seat
For Viton-tip needle, refer to p. 23.
④ BN38/448 Gasket (Black)
⑬ BN38/86 Spring
⑤ BN38/314 Check Valve (Teflon-tan)
⑭ VN30/97 Pin, Arm
C6=307
C6-0307 Screw
⑥ BN38/02 Main Diaphragm Assembly
⑮ BN38/27 Arm
⑦ BN38/149 Gasket - 2 pcs (Fiber - green)
Regulator Body Assembly
⑧ BN38/469 Gasket, Pump (Clear Plastic)
⑨ BN38/467 Diaphragm, Pump (Clear)
Pump Body
⑩ BN38/150 Gasket, Pump (Fiber - Green)
⑪ BN38/468 Check Valve (Clear)
Cover, Pump Body
⑫ BN38/12 Packing (Rubber - black)
Cover, Fuel Inlet
BN38/324 Screw
BN38/320 Screw, Philips Head (6) or
BN34/90 Screw, Allen Head- Stainless (6)

MIKUNI SUPER BN EXPLODED VIEW

MK-BN44 SPR Rebuild Kit for Super BN44 Order#025-651

Numbers 1-16 Included in MK-BN44 Rebuild Kit Part No. 025-651	1.	BN34/96	Gasket, Pump (2) (Black Fiber)
	2.	BN34/97	Diaphragm, Pump (Clear)
	3.	BN34/124	Check Valve (2) (Clear)
	4.	BN34/125	Grommet, Check Valve (2)
	5.	BN34/100	Diaphragm, Damper (Black Rubber)
	6.	BN34/101	Gasket, Damper (Black)
	7.	BN44/146	Filter
	8.	B30/305	O-Ring, Hi Speed
	9.	MD12/16	O-Ring, Low Speed
	10.	KV/10	O-Ring, Needle Valve
	11.	BN34/123	Gasket, Valve Body
007-492	12.	BN34/107	Check Valve (Clear)
	13.	730-03027	Spring, Arm
	14.	VM30/97	Pin, Arm
	15.	BN38/534	Arm (Stainless)
	16.	BN44/145	Diaphragm Assembly
		(Items 17-43 for Reference Only *Not* Included in Kit)	
	17.	BN34/120-30	Screw with Washer (4)
	18.	BN34/95	Cover, Pump
	19.	BN34/98	Body Assembly, Pump
	20.	BN44/109	Stop Screw, Idle
	21.	BN38/39	Washer (Aluminum)
	22.	BN38/341	Spring, Idle
	23.	B26/03	Cap
007-315	24.	604-25017	Adjuster, Hi Speed
007-316	25.	BN38/344	Spring, Hi Speed
	26.	BN38/39	Washer, Hi Speed (Aluminum)
	27.	BN38/172	Washer, Low Speed (Aluminum)
007-318	28.	BN38/343	Spring, Low Speed
007-317	29.	604-26008	Adjuster, Low Speed
	30.	BN44/118	Cap
	31.	786-35015-1.5	Needle Valve Assembly
	32.	VM15/285	Spring Clip, N.V.
	33.	BN34/117-GG	Plate, N.V. Retainer
	34.	CW2-0307-G	Screw with Washer
007-494	35.	N100.606-120	Jet, Low Speed
	36.	N102.221-115	Jet, Hi Speed
	37.	BV15/121-05-GG	Screw
	38.	BN34/108-GG	Plate, Valve
	39.	BN44/165	Valve Body Assembly
	40.	C5-0414-G	Screw
007-493	41.	C6-0308-G	Screw
	42.	BN44/147	Cover
	43.	MCWS-0512	Screw with Washer (4) (Stainless)



MIKUNI SUPER BN JET AND REPLACEMENT PARTS

N100.606 Low Speed Jet

004-450	#50
004-451	#52.5
004-452	#55
004-453	#57.5
004-454	#60
004-455	#62.5
004-456	#65
004-457	#67.5
004-458	#70
004-459	#72.5
004-460	#75
004-461	#77.5
004-462	#80
004-463	#82.5
004-464	#85
004-465	#87.5
004-466	#90
004-467	#92.5
004-468	#95
004-469	#97.5
004-470	#100
004-471	#102.5
004-472	#105
004-473	#107.5
004-474	#110
004-475	#112.5
004-476	#115
004-477	#117.5
004-478	#120
004-479	#122.5
004-480	#125
004-481	#127.5
004-482	#130
004-483	#132.5
004-484	#135
004-485	#137.5
004-486	#140
004-487	#142.5
004-488	#145
004-489	#147.5
004-490	#150

Popular range for single BN44 and BN46 (004-470 #100 – 004-478 #120)

N102.221 High Speed Jet

004-287	#105
004-288	#107.5
004-289	#110
004-290	#112.5
004-291	#115
004-292	#117.5
004-293	#120
004-294	#122.5
004-295	#125
004-296	#127.5
004-297	#130
004-298	#132.5
004-299	#135
004-300	#137.5
004-301	#140
004-302	#142.5
004-303	#145
004-304	#147.5
004-305	#150

Popular range for single BN44 and BN46 (004-291 #115 – 004-302 #142.5)

Needle Valve Assemblies for Super BN44/46

002-880	786-35015	1.5
002-881		2.0
002-882		2.3
002-883		2.5

Arm Springs

007-323	115 grams "Gold" 730-03027
007-322	95 grams "Flat Silver" 730-03027-T
007-321	80 grams "Dark" 999-730-015
007-320	65 grams 730-03030 "Silverish"

Throttle Shaft Rebuild Kits (Super BN only)

007-335	38mm
007-336	44mm
007-337	46mm

LEAN
RICH
16
14.7
14
12
AIR/FUEL
MONITOR

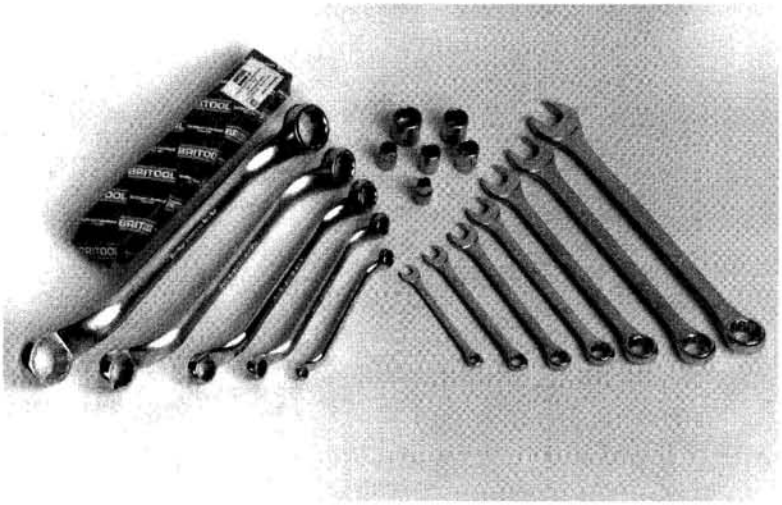
K&N Air/Fuel Monitor

The K&N Air/ Fuel Monitor is a precision instrument designed to aid the performance enthusiast make correct jetting decisions. The monitor measures the oxygen content of the exhaust gas and displays the relative air/ fuel ratio information on an LED Display. This device is the most economical exhaust ananlyzer available, enabling a tuner to see at a glance the air fuel ratio of the engine at any load or throttle position.

Part #005-200

Britool Whitworth Tool Sets from Sudco

Sudco International has just added high quality Britool Whitworth tool sets to their product lineup. All tools are constructed from tough forged chrome vanadium steel with an attractive satin finish that hides scratches and won't slip in your hands when oily. Sets include 12-point box end wrenches, combination box and open end wrenches, and a 6-piece 1/8-7/16 in. socket set. If you own or work on classic British machinery you'll want these Britool sets in your tool box.



950-300	Box End Wrench Set (5pcs.) 1/8–3/16, 1/4–5/16, 3/8–7/16 1/2–9/16, 11/16–3/4
950-301	Combination Wrench Set (7pcs.) 1/8, 3/16, 1/4, 5/16, 3/8, 7/16, 1/2
950-302	3/8" Drive Socket Set (6pcs.on rail) 1/8, 3/16, 1/4, 5/16, 3/8, 7/16

Mikuni Main Jet Wrench

With this plastic wrench, you will be less likely to strip your threads.

Order No. 002-401

Mikuni Pocket Carb Tuner

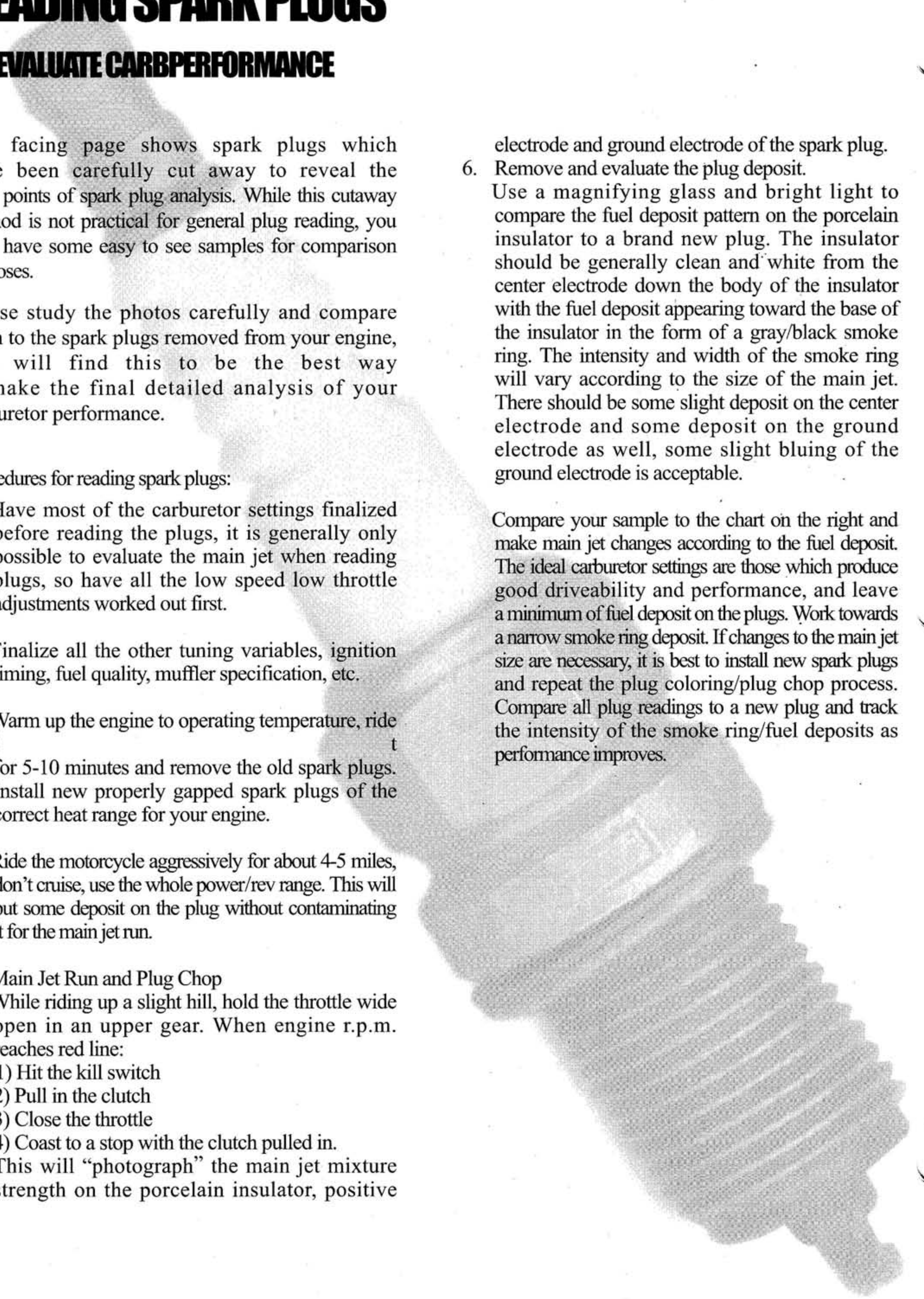
A handy pocket-size slide calculator which can be used to determine required jetting changes in Mikuni carburetors due to ambient temperature, altitude, or both. It also provides a guide for determining rich or lean carburetor conditions. The Pocket Tuner is applicable to both single and multi-carburetor applications on two stroke and four-stroke engines.

MIKUNI
Performance Starts Here
RACING CARBURETORS
MIKUNI
POCKET TUNER
FOR BEST PERFORMANCE INSIST ON GENUINE MIKUNI JETS.

Order No. 002-430

READING SPARK PLUGS

TO EVALUATE CARBPERFORMANCE



The facing page shows spark plugs which have been carefully cut away to reveal the finer points of spark plug analysis. While this cutaway method is not practical for general plug reading, you now have some easy to see samples for comparison purposes.

Please study the photos carefully and compare them to the spark plugs removed from your engine, you will find this to be the best way to make the final detailed analysis of your carburetor performance.

Procedures for reading spark plugs:

1. Have most of the carburetor settings finalized before reading the plugs, it is generally only possible to evaluate the main jet when reading plugs, so have all the low speed low throttle adjustments worked out first.

2. Finalize all the other tuning variables, ignition timing, fuel quality, muffler specification, etc.

3. Warm up the engine to operating temperature, ride it for 5-10 minutes and remove the old spark plugs. Install new properly gapped spark plugs of the correct heat range for your engine.

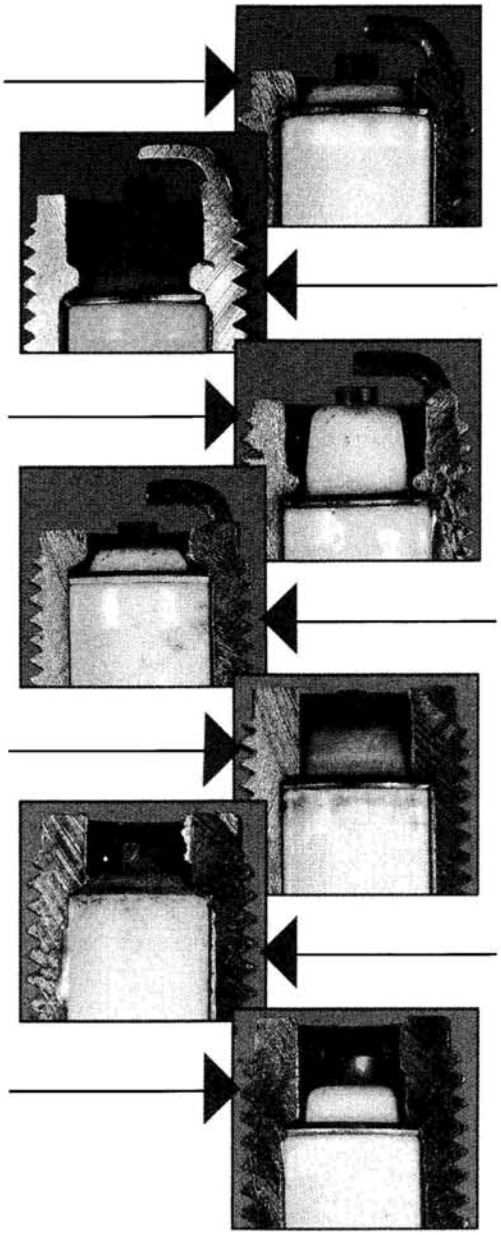
4. Ride the motorcycle aggressively for about 4-5 miles, don't cruise, use the whole power/rev range. This will put some deposit on the plug without contaminating it for the main jet run.

5. Main Jet Run and Plug Chop
   While riding up a slight hill, hold the throttle wide open in an upper gear. When engine r.p.m. reaches red line:
   1) Hit the kill switch
   2) Pull in the clutch
   3) Close the throttle
   4) Coast to a stop with the clutch pulled in.
   This will "photograph" the main jet mixture strength on the porcelain insulator, positive electrode and ground electrode of the spark plug.

6. Remove and evaluate the plug deposit.
   Use a magnifying glass and bright light to compare the fuel deposit pattern on the porcelain insulator to a brand new plug. The insulator should be generally clean and white from the center electrode down the body of the insulator with the fuel deposit appearing toward the base of the insulator in the form of a gray/black smoke ring. The intensity and width of the smoke ring will vary according to the size of the main jet. There should be some slight deposit on the center electrode and some deposit on the ground electrode as well, some slight bluing of the ground electrode is acceptable.

Compare your sample to the chart on the right and make main jet changes according to the fuel deposit. The ideal carburetor settings are those which produce good driveability and performance, and leave a minimum of fuel deposit on the plugs. Work towards a narrow smoke ring deposit. If changes to the main jet size are necessary, it is best to install new spark plugs and repeat the plug coloring/plug chop process. Compare all plug readings to a new plug and track the intensity of the smoke ring/fuel deposits as performance improves.

Reading Spark Plugs **(Photos courtesy of Champion Spark Plugs)**



A correctly tuned engine will show a light deposit (some coloration) on the center wire, core nose and ground wire.

A plug fouled with carbon deposits was running too rich.

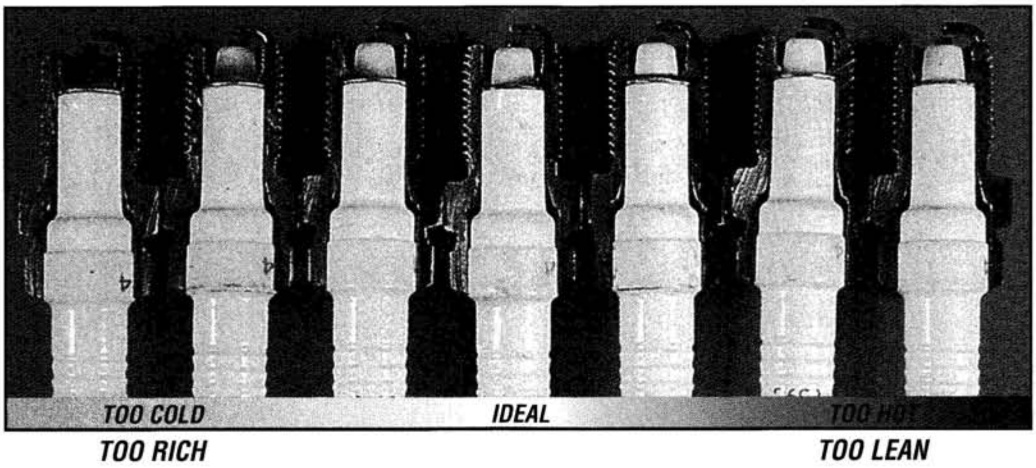
Specs on the core nose is a sign of detonation.

This is another example of detonation.

A build-up of residue on the center wire and darker coloration on the ceramic is a sign the plug is too r***ich.***

This plug is from an engine running on alcohol. Discoloration on the ceramic is a sign the plug is too rich.

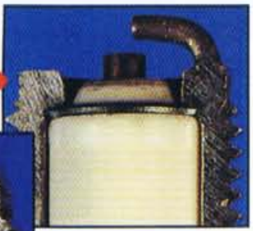
When an alcohol plug is right on target you won't find any blistering, fusing build-up of debris or erosion of the center or ground wires.

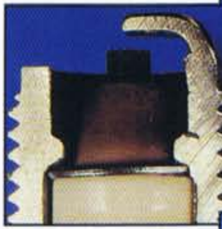


For a more detailed explanation of spark plug tuning, refer to Champion Spark Plug High Performance Heat Range Chart and Tuning Guide. ©Cooper Automotive Inc., Chesterfield, MO 63017

Reading Spark Plugs (Photos courtesy of Champion Spark Plugs)

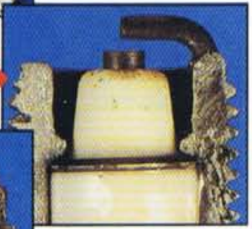
A correctly tuned engine will show a light deposit (some coloration) on the center wire, core nose and ground wire.

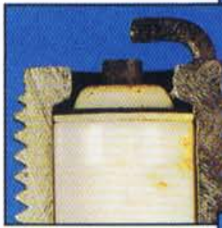




A plug fouled with carbon deposits was running too rich.

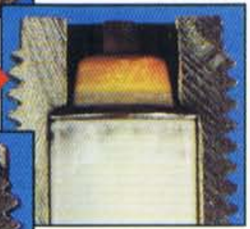
Specs on the core nose is a sign of detonation.

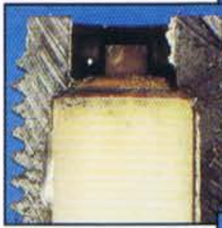




This is another example of detonation.

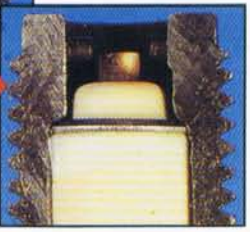
A build-up of residue on the center wire and darker coloration on the ceramic is a sign the plug is too r***ich.***

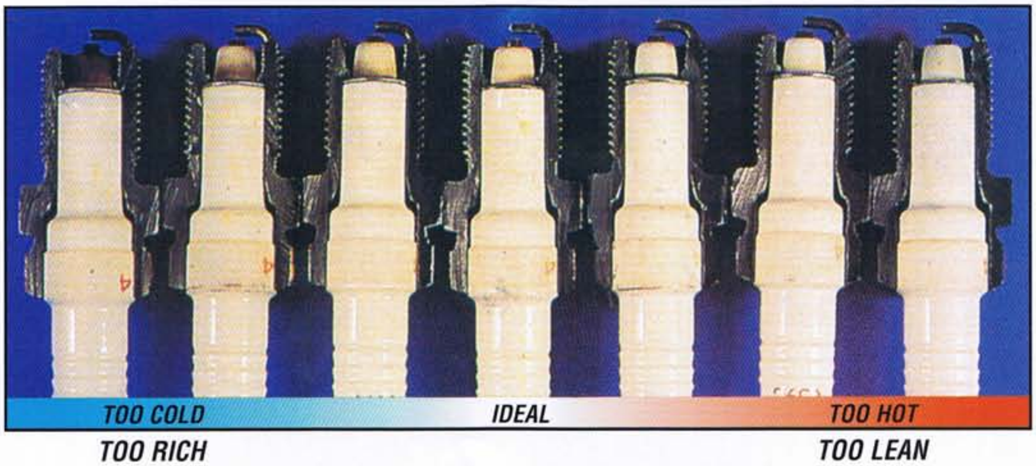




This plug is from an engine running on alcohol. Discoloration on the ceramic is a sign the plug is too rich.

When an alcohol plug is right on target you won't find any blistering, fusing build-up of debris or erosion of the center or ground wires.





For a more detailed explanation of spark plug tuning, refer to Champion Spark Plug High Performance Heat Range Chart and Tuning Guide. ©Cooper Automotive Inc., Chesterfield, MO 63017